The Penalty of Over-Production Is Financial Loss

THERE is danger of over-production in some lines of the paper industry.

Paper is a popular product. It is used in increasingly larger tonnage each year. It is a prime necessity. It is an essential commodity. Everyone needs paper and uses more and more of it each year. America uses paper profligately and extravagantly.

But that is no reason why the producers of it should over-produce, and thereby make it a non-profitable commodity.

Newsprint increased 17 per cent last year—that was some 12 per cent higher than the average yearly expansion for the past ten years.

To provide for another 17 per cent increase this year is only to compel the entire production to be sold at reduced prices except for one very significant factor, and that is, if the publishers refused to contract the new excess tonnage at all at lower prices. This very thing, we understand, has happened in several cases this year.

What a wholesome deterrent to over-production this action is can be easily seen. Here is a mill built at large investment, making say one hundred tons of newsprint, unable to sell its output even at a price concession of $5.00 to $7.50 a ton because publishers generally are satisfied with their present sources of supply, are satisfied with the price charged in their contract and are glad to see the mills make a little money. This is a situation which is not contrary to fact and which it bids all prospective investors or builders of newsprint mills to look into carefully.

We also heard approvingly of the decision of Canadian authorities to look carefully into any prospective newsprint mill installation with a view to limiting the production of newsprint up north.

This is a wise recognition of the fact that the over-production of newsprint will bring grief to the existent industry in Canada.

There are evidences in the West that over-production is not far ahead. Over-production of any grade of paper or any article made from paper brings disaster upon the over-producers as well as upon the balance of the already operating mills.

Kraft paper is increasing in consumption, but it will not increase in profit to its producers if unlimited mill capacity be added without any reference to regulated consumption.

The bag business has ceased to be a profitable division of the paper industry and losses in the line are appalling, attributable to only one cause—reckless over-production.

The paper industry is a noble industry. It should and could be a profitable industry would the manufacturers of the commodity become obsessed with the idea of profitable control.

Profitable control is easy. Eliminate over-production, and losses will disappear and profits grow.

It is a square case of uncontrolled production against profitable control of production and profitable control is both wise and legitimate.

EDITORIAL

Permanent and Durable Papers

FROM time to time fears are expressed by librarians concerning the durable quality of periodicals, books and documents, the paper of which is made from woodpulp. Because the substance of standard newsprint paper consists of chemical and mechanically ground woodpulp and possesses no lasting properties, it is assumed by librarians and others that all woodpulp papers are equally impermanent. Certainly the condition of an ordinary daily newspaper after being stored for ten years should be a warning against the use of such a sheet for the printing of records that are intended for permanent preservation. More than 75 per cent of the body of newsprint paper is made up of groundwood pulp; that is, the whole substance of the tree, which means that the pulp carries with it all of the organic constituents of the raw wood, a veritable chemical laboratory in miniature.

Paper made from a pulp mixture of this kind undergoes an immediate change on exposure to light and air. Oxidation processes start up and the sheet changes color, becoming more or less darkened; it turns brittle and after the lapse of a few years, if handled to any extent, falls into a pulverous condition. It is on account of its weakness in this respect that objection is made to the use of ordinary newsprint paper for the printing of papers that are intended to be kept for any length of time, and it is for this reason that some of the larger metropolitan newspaper publishers resort to the use of a paper made from ragpulp for editions intended for permanent preservation of their own files as well as for the files of some public libraries.

It is incorrect, however, to suppose that nothing answers so well as ragpulp for the manufacture of a sheet of newsprint paper where durability and permanency are desired. In the case of ordinary printing papers, there may be no great difference as to durability and permanency between chemical fiber and rag fiber, conditions of product and manufacturing process being equal. With ragpulp we may be dealing with gossypium or flax, or a mixture of both, and with chemical woodpulp, the fiber may be poplar or spruce, but in either case the cellulose of the gossypium and flax should not differ in chemical constitution from the cellulose of spruce and poplar. It is well known that of late years chemical woodpulp has been displacing gossypium in the manufacture of smokeless powder and rayon, in each of which a chemically pure cellulose is a necessity. On account of the improvements that have been effected in the processes of separating the fibers of wood from their natural incrustants, lignins, etc., and considering the care that is employd in bleaching and washing the fibers, it is not too much to say that a paper can be produced from chemical woodpulp capable of favorable comparison with rag papers that are perhaps more durable.

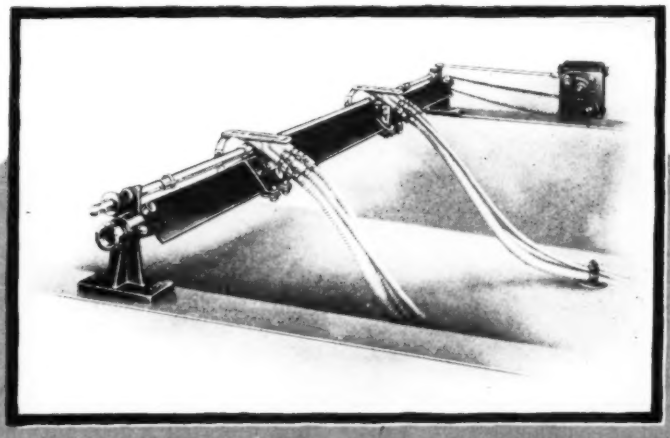
To insist, therefore, as the publishers of the **New York Times** do on the complete supereminence of rag fibers as compared with woodpulp fibers prepared by chemical processes is going a little too far. An all-sulphite or sulphite-and-soda sheet made from chemical fiber true to character, and free from bleach residues, oxidizing substances, or other agents of deterioration, should give equal satisfaction so far as durability and permanence are concerned. The quality of chemical pulp has improved greatly within a comparatively few years, thanks to a better knowledge of cooking and washing processes, but it is not so certain that the material collectively known as rags has improved. The use of chlorine bleach and oxalic acid, to say nothing of the destructive mechanical contrivances of the modern steam laundry, have lowered the quality of nearly all rag stock.

Is Strawboard Passing Out?

ONE of the notable changes in the industry in recent years, is the small amount of strawboard that is now being made in comparison to what was made a few years ago, when it is considered that the total amount of board of all kinds is many times what it was in years past.

This thought has been presented to us on several occasions, and in making inquiry, it has been found that there are very few mills in this country today that are making what was originally known as strawboard—that is, for ordinary box purposes. We believe the mill at Lafayette, Indiana, which is now turning out strawboard as always, is one of the very few if not the only one left in America, that is turning out regulation strawboard. True, there are a number of mills that are making light weight strawboard for egg case fillers, and for corrugating, but this material is for special purposes, and there are now a number of mills that are working on other types of board to be used for corrugating and egg case fillers, which might ultimately take the place of the light weight strawboard. Also, in the case of the egg case filler manufacturers, there have been a number of attempts made to manufacture a board out of straw, but with a different kind of cook from that which has been used in ordinary strawboard and this, of course, would be different from what has always been known as strawboard.

There has always been an objection to making board out of straw by the lime process for egg case fillers, the claim being that this type of board



The Vickery Felt Conditioner

A Paper Maker who has just installed his eleventh says:

"By the use of the Vickery Felt Conditioner, we do not find it necessary to wash our felts to maintain the uniform finish we desire. By having clean felts, our troubles are greatly reduced in making our reels. A great deal of time is saved by not shutting down our machines for wash-ups and on one occasion, when we were obliged to run one of our machines eleven days, we did so without shutting off the stuff.

"We find that our felts, in some instances, have given us a slightly longer run. While this is of some importance to us, the greatest advantage we find to be in the fact that we are able to make a more uniform product."

BIRD MACHINE COMPANY

South Walpole : : Massachusetts

BIRD MACHINERY

650

EDITORIAL

tainted the eggs that were put in storage for any considerable length of time. It was claimed that this would not be true where the straw was cooked by soda or other processes.

This condition may have an effect in several directions. Straw is getting scarcer and more costly all of the time. The farmers do not want to get rid of it as was once their wont and naturally demand a larger price today than they did a few years ago in the central section of the country. Then again, there have been a number of attempts made to utilize straw for a higher grade of paper.

Every now and then some one comes into our office with a new method of cooking straw to make fine papers. It is a well known fact that straw has a wonderfully good fiber and which can be made into higher grades of paper, and the old timers in the industry know that a higher grade of paper was made with straw years ago, before wood came into such general usage.

The processes used at that time were costly and wood soon superseded it. Now that new processes are being developed, however, it is possible that straw may come back into its own again for the manufacture of the higher grades of paper, and if so, this will help out to a considerable degree the fast disappearing wood supply.

There is considerable room in the industry for research work on the utilization of straw for the higher grades of paper, and we feel that the men who devote time and effort to this subject will not only find it very interesting, but possibly extremely profitable, for with our fast disappearing forests, something must necessarily be done and it is possible that both straw and cornstalks, as well as other seasonable materials, can and will be used in the near future in the manufacture of some of the better grades of paper.

The Best Safeguard

IN A recent letter from one of our subscribers, a prominent man in the paper manufacturing world, in referring to the subject of safety writes, "A man must have a right mental attitude toward his job, and towards life in general, in order to be an efficient and safe workman. His attitude is more important in the matter of safety than all the guards that can be put on machines, or all the safety supervisors that can be put over him. It is true that guards should be put every place where they can be conveniently placed to protect workmen, and every plant should have supervisors, but the right mental attitude of the man himself is really of more importance than all of these other things combined.

"For many years," he writes, "I worked along the old lines and theories. My superiors cautioned: Don't stick your fingers there; don't stumble, and all the other don'ts, but we accomplished very little. We are now teaching that men can't think crooked and work straight, and this is working fine.

"We try to instill ambition into our men, and encourage them to aim to be something, and this can be applied to the operatives in a paper mill, as well as any other type of workman. When you have done it, you will have safety. We teach a man that he is a bigger, more important man than he has ever thought before; in other words, we show him that if he is earning $1500 a year, this is five per cent on a $30,000 job, and if thinking of a $1500 job, he thinks bigger things of a $30,000 job; or, for instance, if a man is getting $2500 a year, he is working at a $50,000 job, or if he is only getting $1250 a year, he is working at a $25,000 job, and this makes him see things in a different light."

This writer certainly has the proper slant, for it is only too true that a man cannot think crooked and act straight. His acts conform to his thoughts.

Reading Advertisements

"I READ the advertisements in THE PAPER INDUSTRY every issue; in fact, I look over every advertisement as my paper comes to me before I go over the educational articles, because I realize that often there is as much of an education in reading the advertisements as there is in reading the articles. The reading of these advertisements is about the only way that I can keep up with what is going on in our field, for the reason that many new things are not described in the reading pages of your publication, but are described in the advertisements, and if I did not read the advertisements I would lose out on many of the new things as they come along."

The above was written to us recently by a paper mill superintendent, and is no doubt one of the reasons why this man has progressed so rapidly in his chosen field of work. He goes on to say, "We fellows who are on the job every day in the year have to depend on such publications as yours to keep us from losing out entirely as regards new developments. In most cases in the advertisements, these stories are gotten up in such form that not only new devices are described but they are shown in pictures."

The advertising pages in THE PAPER INDUSTRY, as stated by this writer, keep you in continual touch with what is going on in the manufacturing field, and the time spent in going over these advertisements is very well repaid.

THE PAPER INDUSTRY

REG. U. S. PAT. OFF.

Vol. 9 APRIL, 1927 No. 1

The Breeding of Rapid Growing Trees for Pulpwood

By RALPH H. McKEE[1], A. B. STOUT[2], and E. J. SCHREINER[3]

A forward step in the cultivation of pulpwood trees as crop plants is outlined by the work of Professor McKee in the accompanying article. The artificial fertilization of poplar trees so as to obtain a hybrid growth capable of reaching maturity sooner than the natural varieties was first suggested by Prof. A. Henry, now of the Royal College of Science, Dublin. In his early experiments, Professor Henry had succeeded in cultivating a hybrid poplar that in twenty-seven months had grown to a height of 10 ft. 1 in., and, as pointed out by Professor McKee, in an article published early in 1916, the importance of this can be estimated when it is considered that many forest trees are scarcely more than a third this height after twenty-seven years' growth. Professor McKee suggested at that time that many different varieties of poplar species might be made the subject of experiment by crossing them by artificial fertilization and then testing the woods obtained for their papermaking qualities. It was hoped in this way that a hybrid poplar might be chosen that in rapidity of growth and other conditions would be adapted for use as a source of stock for the rapid reforestation of pulpwood lands. His present article deals with a logical development of the idea and it should prove of great suggestive value to pulp and paper firms that employ scientific forestry methods in their woodlands operations.

THE following describes a new scheme of reforestation for pulpwood initiated by the Oxford Paper Co., which it is believed will be of interest to those engaged in the paper industry as well as to those interested in forestry.

There is every reason to believe that the decided improvement of the various forest trees will result from proper selective breeding and hybridization. By such methods the important cultivated plants of today have been obtained, and are still being improved. Already among tree crops the results of such breeding have been most conspicuous in the various fruit trees, in certain of the nut trees and in ornamentals. The similar improvement of forest trees grown for pulpwood or timber presents no essential differences as to methods of procedure or the prospects for gratifying results.

The importance of such results is apparent when one considers that pulpwood is now being consumed four to six times as fast as it is being grown. The main difficulty in breeding trees is that of the time required to assemble and grow material for the breeding and of the time one must wait for the seedlings to mature. Breeding trees is naturally a long-time problem.

In general, the steps to be taken in the breeding of trees may be summarized as follows:

1—The assembling of ample and suitable material for the breeding. This involves the survey of the species and varieties of the group under treatment and the introduction of as many as possible of the related species and varieties from all parts of the world having climate similar to that of the area where the trees are to be grown. The main attention should, perhaps, be devoted first to those species and strains of known value and of greatest promise. The material collected for use in the breeding should, however, be as extensive as is possible.

2—Selective breeding from seed progenies within the species in order to isolate the strains that possess special merit and that are most worthy of propagation and of use in further breeding.

[1] Director of Research Department, Oxford Paper Co.
[2] Director of Laboratories, New York Botanical Garden.
[3] Forester, Research Department, Oxford Paper Co.

3—Cross-breeding or hybridization between species, varieties or strains to produce types more or less new, especially in respect to rapidity of growth or immunity to diseases.

4—Propagation of the most promising strains

Fig. 1.—The work incidental to obtaining seed in the breeding of poplars must, with few exceptions, be done high up in the trees. The trees must be climbed (1) to enclose female flowers before they are ready for pollination, (2) to secure pollen, (3) to make the pollination, (4) to remove paper bags when the pistils are no longer receptive, (5) to enclose maturing capsules in cheese cloth sacks in order to prevent loss of seed, and (6) to collect the ripe seeds. The tree here shown is P. nigra charkowiensis *in Highland Park, Rochester, New York.*

which are isolated or produced followed by proper tests for their adaptability to soils and climate.

If the propagation is to be by seed, then repeated selection will most likely be necessary before a strain can be maintained true to a type. The special qualities of "sport" seedlings and especially of hybrids seldom breed true in seed progenies. If, however, vegetative propagation by planting cuttings is possible and practicable, any single seedlings of merit may be propagated as a clonal variety. Such propagation insures the greatest degree of uniformity possible among plants, for each plant is merely a branch of the one original seedling bud. The highly improved varieties or unusual types of fruit trees, nut trees and ornamental trees are almost without exception grown as clonal varieties. Clonal propagation allows the propagation of a plant that may be sterile and unable to reproduce by seeds, a condition frequently seen in hybrids. In the development of improved varieties of forest trees it will, therefore, be of advantage if vegetative methods of propagation are possible.

Characteristics Desired for Pulpwood

For forest trees that are to be grown as crops for use for pulpwood and lumber, adaptability to soil and climate, quality of wood for some particular use, freedom from disease, and rapidity of growth are characteristics of the first importance. Any variety worthy of special culture should possess these three qualities.

Marked increase in vigor of growth beyond that seen in either of the parents is frequently obtained in hybrids. "Hybrid vigor" has long been observed by plant breeders. But cross-breeding between closely related strains may also give offspring that exhibit remarkable increase in the vigor of growth. Also occasionally an individual plant is found that noticeably surpasses all its sister plants in rate of growth and in size at maturity. In some cases, at least, it is found that such a plant has in the cells of its body an increase in the number of chromosomes over that charactertistic of the species. Such sports and hybrids in general are not liable to breed true from

Fig. 3—The good seeds of poplars germinate quickly. The hybrid seedlings shown in these pans are only sixteen days old from the date of the planting of the seed. At this stage "damping-off" may develop and kill large numbers of seedlings unless preventive measures are employed.

seed but may be increased in number by vegetative propagation.

Among trees, several clonal varieties that possess noteworthy vigor of growth may be mentioned. One conspicuous case is the Caroline poplar. **(Populus Eugensi)**. This clonal variety was evidently derived from a single seedling which was a chance and accidental hybrid between a hybrid poplar (P. regen-

erata) as a seed parent and the Lombardy poplar as a pollen parent. The original tree standing in the nursery of Simon-Louis near Metz, France, was described by Augustine Henry in 1914 as "the most wonderful tree in Europe in point of vigor." It was then 81 years old and "no less than 150 feet tall and 25 feet in girth at 5 feet above the ground and appears to be growing rapidly."

The rapid growing poplar, **P. regenerata** arose as a chance seedling in a nursery near Paris in 1814 and is supposed to be a hybrid.

The poplar, **P. robusta,** is from another chance seedling found at the Simon-Louis nursery in 1895. Apparently this is a hybrid between a form of the cottonwood of eastern United States and a fastigiate form of the English black poplar. Plants of this clonal variety have a narrow columnar habit of growth and are reported to grow to a height of 90 feet in 18 years.

Some fifteen years ago Augustine Henry found that besides the poplars already mentioned, such vigorously growing trees (clonal varieties) as the Huntingdon elm, the Lucombe oak, the London plane, the common lime, and the cricket-bat-willon are also accidental hybrids of the first generation. Henry says, "Why not, then, proceed to make artificially first crosses in other trees with still more valuable lumber," that "the only hope of salvation for forestry is in growing timber rapidly," and that "hitherto nothing has been done to improve the breeds of forest trees, and foresters have never even thought of the possibilities in this direction, though gardeners and farmers have shown the way for centuries."[1]

Fig. 4—Some of the best of the hybrid seedlings of the 1925 breeding when about 100 days old. The three at the left are from the cross P. alba *x* adenopoda. *The three at the right are from the cross* P. balsamifera virginiana *x* P. trichocarpa. *In the following year (1926), these plants were grown in a nursery and when they were 16 months old they had grown to the size shown in Figures 5 and 6.*

Professor Henry's interest in hybrid trees led him to make various crosses from which at least one poplar of value was obtained. In 1912, using trees growing at the Royal Botanical Gardens, Kew, England, he pollinated female flowers of a tree of what was considered as **Populus angulata** (evidently a form of the necklace cottonwood of eastern United States, **P. balsamifera virginiana sargent)** with pollen of a trees of **P. trichocarpa.** He obtained some seed from which four seedlings were grown. These grew to a height of two inches during the first summer from seed. At the end of the second summer of

Fig. 2—Working on trees of the northern necklace cottonwood from the roof of buildings at the State Agricultural Experiment Station, at Geneva, N. Y. Flowers that have been enclosed in paper bags are being pollinated.

growth, the tallest was 3 feet 6 inches in height, and at the end of the next summer (1914) this plant was 10 feet and 1 inch tall. These hybrids were named **P. generosa** and possibly two of them were propagated from cuttings under this name.

Perhaps the greater number of hybrids which it is possible to produce among plants will be either no more vigorous in growth than the parents or of less vigor. However, fortunately some are likely to be of much more vigor than their parents.

There is very little to indicate, in advance of the actual hybrids themselves, what crosses will yield offspring of noteworthy vigor. Such plants may even arise from parents of little worth and of comparatively slow growth. In breeding for vigor of growth in any group of plants, as many crosses should be attempted as are possible. The chances for obtaining the very best hybrid will thereby be increased.

[1] Augustine Henry, On Elm-seedlings showing Mendelian results. Jour. Linnean Society, Botany. 39: 290-300, 1910.

Work Undertaken by Oxford Paper Co.

The breeding of the various poplars along the lines mentioned in the preceding discussion is a definite project now being undertaken by the Oxford Paper Company through its Research Department in co-operation with the New York Botanical Garden.

This particular project had its inception in a statement by Professor Ralph H. McKee in an article on "Proper Reforestation," published in 1916, in the publication "Paper." After citing cases of vigorous growth in poplars and other hybrid trees, he makes the following statement regarding reforestation for pulpwood:

"The practical solution of the problem will be to get together specimens of the twenty-five or thirty varieties of poplars known in this country and abroad, cross them, grow the resulting hybrids, and test the woods obtained from these hybrids for pulp-making qualities. From the results obtained, choose the hybrid that in growth of wood, quality of wood considered, is the best, and, using this tree as a source of stock, reforest the cutover pulpwood lands."

The co-operation and the financial support necessary to carry out this project were not secured and combined until the spring of 1924 when the three authors of this report co-operated to begin work. Since then the breeding of poplars has been prosecuted with vigor.

A main feature of this breeding is the hybridization of as many species and varieties of poplars as is possible with first consideration to those that are most hardy and most vigorous in growth. Fortunately for the progress of this work, many kinds of the poplars of blooming age are included in the collections of trees growing at the New York Botanical Garden and at Highland Park in Rochester. Both male and female trees of the northern form of the necklace poplar (**Populus balsamifera virginiana**) were available for use in breeding on the grounds of the New York Agricultural Experiment Station at Geneva, New York. Permission to work with these trees was kindly given by the proper officials of the Experiment Station and of the Park Department of Rochester. The relative seasons for the blooming of the poplars at these places are such that the pollinations can be completed at the New York Botanical Garden before it is time to begin similar work at Geneva and Rochester.

Fig. 5—A typical hybrid of the cross P. balsamifera virginiana *x* P. trichocarpa *at the end of the second summer of growth from seed. The measuring stick is graduated in feet.*

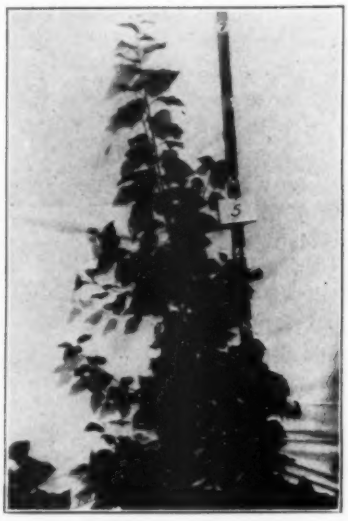


Fig. 6—A hybrid between the white poplar P. alba *and the old world aspen* P. tremula Davidiana *showing the rather remarkable growth attained at the end of the second summer from seed.*

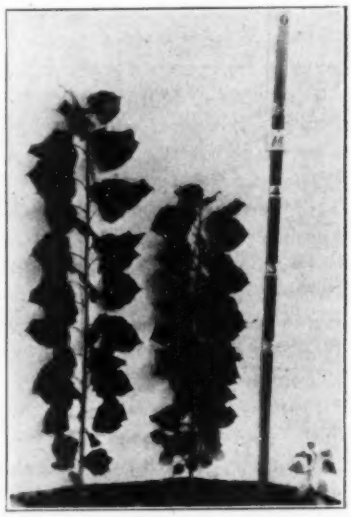


Fig. 7—These three sister seedlings are from the same catkin of the cross P. angulata *x the hybrid* robusta. *They exhibit extreme differences in vigor of growth such as are frequently seen when a hybrid is one of the parents of a set of seedlings.*

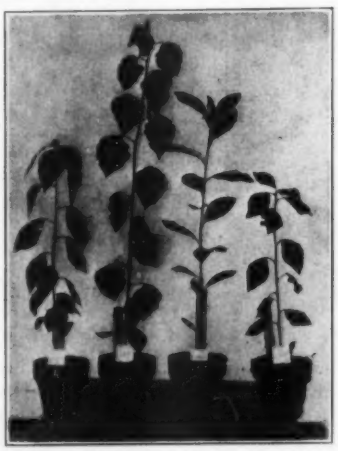


Fig. 8—Some of the best of the hybrids obtained in 1926. From left to right: P. Sargentii *x* P. trichocarpa, P. Sargentii *x* P. balsamifera, P. nigra *x* P. laurifolia, *and* P. Sargentii *x* P. nigra berolinensis. *These seedlings are all in three inch pots and all about 100 days old from date of seed planting.*

Breeding by Controlled Pollinations

This breeding is being done almost entirely by controlled pollinations, which for the most part must be made high up in the trees (Figures 1 and 2). The female catkins are enclosed in paper bags before the flowers are ready for pollination and each of the

later operations is performed in its proper turn.

Many special problems have been encountered in the course of the work. The viability of the pollen produced by each male tree used as a parent has been tested by artificial germination on culture media. By such tests the length of time pollen of poplars may be kept viable has been determined. Means of collecting pollen and of hastening and retarding the shedding of pollen have been devised. Of other matters requiring special attention, mention may be made of (1) methods of collecting, preparing and planting seed; (2) care of young seedlings, especially in regard to the control of damping off fungi; and (3) the handling of young trees in the nursery. Attention has been given to the methods of planting poplars in various soils to the best means of storing cuttings, to studies of the fungi which attack poplars and to the length of fiber in various species, clonal varieties, and hybrid seedlings.

The breeding work has been highly successful in the production of a large number of hybrids some of which show promise of being valuable as pulpwood trees. Seedlings have been obtained from 96 different cross-combinations between species and varieties. Breeding within several species is also well under way. A total of over 13,000 seedlings is now being grown. From various of the cross-polinations large numbers of seed were obtained, but the number of seedlings reared from any one cross was usually limited to 200, although in a few cases the number of sister hybrids being grown is about 500.

The northern strain of the necklace cottonwood (**P. balsamifera virginiana sargent**) has been used quite freely in the breeding both as male and as female parents. This species grows rather widely in New York State where certain trees may be seen with trunks of a circumference of over 20 feet.

Another species used rather freely is the **Populus trichocarpa** which grows wild from southern Alaska through western Washington, Oregon, and California to the San Bernardino Mountains. In certain localities it is nearly 200 feet in height with trunk diameters of seven or eight feet. It is the largest of all the broadleaved trees of North America. Various forms or varieties of the black poplar (**P. nigra**) of Europe have been used in the breeding, as have the white poplars, **alba, alba canescens, alba nivea,** and **adenopoda.** Some of the most promising of the hybrids have come from such crosses as (1) **P. balsamifera virginiana x P. trichocarpa,** (2) **P. angulata x P. trichocarpa,** (3) **P. angulata x P. balsamifera virginiana,** (4) **P. alba x P. tremula Davidiana,** and (5) **P. alba x P. Adenopoda.**

The hybrids obtained from the seed of the spring of 1925 have now had two summers for growth; the first summer in seed pans and small pots and the second in a hired nursery. In a number of the groups of hybrids, plants have in this length of time grown over six feet in height and the very tallest seedling was slightly over seven feet tall.

All the seedlings obtained whether from cross pollinations or from inbreeding are being carefully studied. Selections have already been made of the most promising for rapid propagation as clonal varieties and for tests in reforestation and for pulp making value.

The accompanying photographs illustrate phases of the work and various stages in the growth of some of the most promising of the hybrids obtained.

Paper Liners in Tin Cans

Discoloration by Food Products Prevented

By C. L. MANTELL

Consulting Chemical Engineer, Pratt Institute, Brooklyn

IN their extended investigation of the corrosion of tin plate containers by food products packed or canned in tin cans, Mantell and Lincoln showed that the discoloration of the inside of the can was due to sulphur compounds. Discoloration or tarnishing was shown to be largely the result of chemical action of the food product constituents on the metals of the container.

It is well known that many food products, such as the legumes (corn, beans, peas, etc.), contain sulphoproteins. Clams, lobsters, fish and other foods of marine origin all contain sulphur compounds. These compounds, as a result of the processing of the foods during canning, may break down, with the resultant production of hydrogen sulphide or related substances. Tin plate is seldom free from pin holes; that is, the base steel of the plate is not completely covered with tin and iron is exposed at the pin holes through the tin coating. Thus both iron and tin will be exposed to chemical attack by the constituents of the food products. Iron is affected by hydrogen sulphide with the resultant formation of black compounds and colorations. Tin is also tarnished by sulphur compounds to form black or brownish stannous sulphide. With small amounts of sulphides, the effect of the attack on the tin plate may be evident only as a tarnish whose color may vary from blue to brownish black.

"Can black," as the discoloration is termed, is not harmful, but its appearance in a can is unappetizing. It is objectionable from the esthetic viewpoint. Lacquering the can will eliminate the can black, but such a container is likely to be more costly. The bright tin metal surface of the inside of the can increases the desirable appearance of the container when it is opened. The decorative effect of the tin metal makes a better looking package.

In the severe cases of lobsters and clams, the entire inside of the can is deeply blackened. The appearance of the food is completely spoiled. This corrosion was

a great problem of the packers and militated against the sale of these foods in anything but glass containers. The blackening in tin cans has been entirely eliminated in the case of these foods by the use of parchment paper liners in the cans. The paper is cut in circles to fit the bottom and top of the can. The sides are protected by a sheet of paper rolled into a loose cylinder. No attempt is made to hold the cylinder together, the paper fitting loosely in the can. This means of eliminating can black is cheap and satisfactory. It removes the necessity of employing glass containers for maintaining the appearance of the food. Glass is more expensive than tin plate and far less suited to cheap transportation.

Large scale commercial experiments were followed by practically complete adoption of the paper liners by the sea food packers. It has been a boon to the Canadian lobster packers especially. The liners very effectively prevent discoloration. Food packed with paper liners, when the cans are opened present a bright, untarnished tin surface, totally undiscolored. The food is far more appetizing in its appearance, more readily saleable and less liable to complaint from the consumer.

The perfection of the paper liner to prevent discoloration in tin cans containing food products is a triumph for coöperation between the paper industry and a new customer, the food product canner.

A New Era in Industrial Power

By ROBERT S. BAYNTUN
Rust Engineering Company

THE recent progress in industrial power plants has been of a nature such as to indicate that we are on the brink of a revolution—bloodless, but none the less effective—in the design and operation of such plants.

No longer can it be taken for granted that the small mill power plant may be wasteful, inefficient and out of date, and that it really does not matter much. No longer can the public utilities reserve to themselves efficiency as a birthright. No longer should it be assumed that, even though the cost of power may be only a small percentage of the total manufacturing cost, the savings that may be effected are too unimportant to count. We have changed all that, and a new era has commenced.

Industrial executives are awakening to the fact that there is no reason whatever for their power plants to be shoveling good dollars onto the ash heap each day; these same dollars would make a much better showing on the dividend pile.

It is now possible to take any ordinary industrial power plant working along the old lines and by the addition of high pressure boilers and high back pressure turbines acting as reducing valves, to replace the old boiler plant and to show savings that will return the whole capital outlay in two or four years.

This applies to most advantage in the case of industries which need large quantities of low pressure steam for process work but the same principle may be made use of in low pressure steam power plants by exhausting the high pressure turbines to supply the low pressure engines or turbines. The savings in such a plant, while of less magnitude, owing to the rejection of a large part of the total heat to condensers, may yet be very well worth while.

Further economies are effected by the substitution of modern high efficiency boiler room equipment for plant of an older type. The new plant equipped with superheaters, air preheaters, and modern stokers or pulverized fuel, should average in operation eighty-five per cent efficiency, and thereby effect a savings of twenty to twenty-five per cent on the total fuel consumption from this source alone. Labor again is an item that should be heavily reduced.

There is nothing particularly new in the foregoing statements. It has been commonplace with engineers for some time past that industrial power plants are mostly wasteful and inefficient and should be improved.

Granted then that the foregoing statements are generally acknowledged as correct by engineers, what is it that stands in the way of the general and immediate acceptance by the industries of the advantages to be so readily obtained. It will be worth while to investigate calmly and without prejudice the reasons that underlie the hesitation of the industries and to examine their validity. Having done so we may hope to be in a position to show that the objections are more apparent than real and that the adoption of improved methods will result in increased dividends.

The objections raised in the minds of executives to making such changes as suggested are grouped as follows:

Allocation of Capital to Field of Maximum Return

The capital that can be raised for mill improvements is strictly limited; if a large sum of money is diverted to the power plant which might be devoted to general mill improvements or to extensions which would increase production, will it return equal or greater revenue?

The question raised here is probably the one which more than any other is the stumbling block in the

way of making radical changes in the power plant. Most mill executives have a first hand specialist knowledge of the technology of their trade; they realize how profitably extra capital may be employed in the improvements of their process machinery and how by increased production they may minimize the overhead factor of their costs. All this is constantly before their minds, and the first natural instinct is to use all available capital along these lines. On the other hand since it is given to few to possess specialist knowledge in many branches, it has been the custom to reply on second hand information when it comes to dealing with the power end of the job. Less confidence is naturally felt in what others promise than in the definite knowledge in their own possession, and the result is that available capital is generally used for other than power plant purposes.

Is this policy correct? Obviously the whole question boils down to the point as to which department will return the greatest interest on the outlay. This may be made the subject of the most careful investigation for each individual case, and it will usually be found that the balance is very heavily in favor of putting the necessary capital into the power plant end.

Dealing with the matter on general lines, it should be easy to demonstrate the truth of this statement. Taking the case of the average pulp and paper mill where the power plant conditions are neither very good nor very bad, the installation of a high pressure modern boiler plant with high back pressure turbines exhausting at the existing mill pressure to supply all the plant as before, and at the same time generating all or most of the electrical power as a by-product at an almost negligible cost, will return the whole capital layout in two to four years. The savings in the case of a pulp and paper mill may reduce the total cost of production by two to five dollars a ton. Is there any other way in which a corresponding amount of capital may be laid out to insure equal return? We may be permitted to doubt it. How many pulp and paper mills are there that return fifty per cent or even twenty-five per cent on their whole capital?

It would seem that the first and most weighty objection that may arise in the minds of executives has no foundation in fact.

Cost of Plant

The second objection that may be brought forward is the supposed excessive cost of high pressure installations. To this one might reply that the more capital one can invest at such high interest the better for one's pocket. As a matter of fact such a reply is superfluous, since it can readily be shown that the cost of the high pressure plant complete is approximately the same as that of the low pressure one supplying the same amount of power and steam to the mill.

This may be readily grasped when it is remembered that the high pressure plant, being much more efficient than the low pressure one, will require less boilers, superheaters, stokers and buildings and little or no condensing plant. Moreover, the cost of a large part of the plant, such as stokers, coal conveyors, electrical equipment, buildings, etc., is unaffected by the high steam pressure.

Here again it is seen that the objection is without foundation. The modern high pressure plant will cost no more than the modern low pressure plant and will give much greater economy.

Period of Changeover

An important practical point that will be raised is what interruption of production will be occasioned during the changeover, when the new plant is put into commission and the old one is shut down? The answer to this is simply, none at all. There is no reason why the period of transition should be marked by any loss of production. Local conditions will, of course, vary the procedure necessary, but efficient management should render it a matter of ease to effect the changeover without any reduction of output.

Liability of Breakdowns

The next question that arises is somewhat akin to the preceding one. What risk is there of loss of production, especially in the early stages, through breakdowns due to the high pressure and the increased complexity of the apparatus?

It is true that any new plant has to pass through a settling down period while the machinery is getting into running shape, yet there is no reason why this should be noticeably more so in the case of the high pressure plant. No matter what the pressure, the various parts of the plant have to be designed to suit the conditions, and with the experience gained during the past few years with high pressure apparatus, manufacturers can supply such plants to operate as reliably as the older low pressure apparatus. This shown by the numerous high pressure utility plants, which have proved fully as reliable in service as those of less modern design.

Novelty of Type

One hears occasionally the objection that there is very little experience with plants of this type so far, the idea being to hold back and let others do the experimenting. This is the type of difficulty raised by those who must come in at the tail end of every movement and who run the risk thereby of losing business to more far-sighted competitors.

Bleeder turbine systems have been standard practice for many years past, and have definitely proved their value again and again. While it is only recently that full advantage has been taken of the possibilities that lie in this direction, there has been sufficient experience to prove beyond the shadow of a doubt

that the new methods have come to stay, and that they will amply live up to promise.

Certainty of Returns

What certainty is there that the anticipated savings to be made by such a plant will actually accrue?

To this it may be answered that the preliminary survey covering the steam and power demands must be competently carried out, so that all the requirements may be known with reasonable accuracy. This done, and the same designed by competent engineers, experienced in this class of work, the result will follow as surely as any other result of engineering design. It is not a matter of guess work, but of engineering knowledge based on calculations and experience.

Operating Force

Would not such a plant require a staff of specialists to run it? Emphatically "NO." Any engineering staff competent to run a low pressure plant can be trusted to carry on the work of the new installation. This has been proved definitely by actual experience in changing over plants. It is, of course, necessary to employ competent men irrespective of the type of power plant, or trouble will surely follow.

Danger

Are not high pressure plants dangerous to life and property?

Not at all; the apparatus is designed for the pressure it has to carry and being so is no more dangerous than that used for low pressure. A bridge designed for heavy loads is no more liable to fail than one for light loads; it is simply a matter of design.

Experience shows that nearly all explosions occur in low pressure plants; in fact it is hard to recall instances of such trouble in very high pressure stations.

Having examined the principal objections that suggest themselves to the minds of executives when considering the installation of high pressure power plants and having seen that they have little weight against the advantages that are to be gained, we may be permitted to give some details of a modern pulp and paper mill power plant in which utilization of the most up-to-date methods has been carried to the greatest desirable limit.

The pioneer plant of the Chesapeake Corporation at West Point, Virginia, is an outstanding example of the economies that may be obtained by correct design when backed up by a clear-sighted and financially courageous management. They have blazed the trail, and it is for others to follow and to share the advantages.

In this mill, production was hampered by the old boiler plant, which had not kept pace with the rest of the mill and was much overloaded. Seven old boilers were replaced by three of 500-h. p. each, operating at 425-lb. pressure and 100 degrees F. superheat, fitted with underfeed stokers and air preheaters, and working normally around 200 per cent rating. The whole of the steam generated by these boilers is first passed through a high pressure turbine which exhausts 130-lb. pressure to the original main steam header, whence it passes to the various engines and processes of the mill. In its passage through the turbine, it generates 800 to 1,200 kw. of electrical power, at an almost negligible cost and this replaces current which previously cost one cent per kw. h. It will readily be seen that this represents a saving of a very high order, directly due to the employment of high pressure.

In addition to this, the new boiler plant designed along the lines of high economy, operates at 82 to 85 per cent efficiency as against 70 per cent on the old plant, when working at its highest economy before recent overloading. The air for combustion is preheated to 450 degrees Fahrenheit and the gases go to the stack at temperatures of around 250 degrees Fahrenheit. No trouble has been experienced with refractories.

This plant being in the South, the majority of the operating force is colored, but in spite of this no difficulty was found in teaching them to operate the new plant, and all the force, white and colored, have acquitted themselves most creditably in adapting themselves to the new conditions.

The reduction of operating labor, amounting to 66 per cent, is in itself a source of considerable saving and the total economies obtained are of such an order as to return the whole of the capital in less than three years. It must be immediately apparent to all thinking persons that possibilities such as these are not lightly to be dismissed. What has been done in one place can be repeated in another. The mill executives who have the foresight to get in among the leaders in the adoption of improved power plant methods will reap a rich harvest in the shape of increased dividends.

A word of warning in season may not be out of place here; such plans as described above are not the result of haphazard design. A careful study of the conditions must be made in each case, taking into account all variations in power and steam demands that may occur, and the plant, when finally designed, must be such that it can deal with all demands, regardless of the variations and at the same time operate with the utmost efficiency over the normal changes on the conditions. In other words each plant must be tailor made, and copies of one plant introduced into another are not likely to achieve the best results.

As a general rule the designs for such a plant should be delegated to a reliable firm of engineers who have made a specialty of this line of work, as there are many important points of design which have to be learned by experience and neglect of these will inevitably lead to trouble and reduce the economy obtained.

Cost Accounting for Paper Mills

Part V—Finishing Costs

By CHARLES WILLIAM GOULD, JR.

As barrels of glue stock, sacks of hides or drums of rosin paste are drawn from stores for use, the trucker detaches the stub from each tag, forwarding them to the cost department each day, as in the case of rags.

An Animal and Rosin Size Batch Report should be constructed, for use by the size-makers, and so designed to permit recording the batch number, the gross and net weight of materials and chemicals used in making each batch, and also a hide yield record.

When the size-makers use a barrel or sack of glue stock, they remove the main portion of the tag from the container and record in the columns provided on the batch report, the gross, tare and net weights of the materials used. After the batch has been completed, the size-maker forwards a copy of the batch report, together with all bale tags for materials used in making the batch, to the Cost department, where (after being matched with the stubs) the bale tags are used to credit Raw Material Inventory cards (see fig. 5, page 976, PAPER INDUSTRY Sept., 1926) for glue stock, hides or chemicals and also for entry on the Material Used Register sheets for sizing glue or rosin paste, as may be proper.

At the close of each period, the size-makers should take an inventory of the animal size in the tubs in the size room, together with that unused at the paper machines. Should there be any partially prepared size in the cooking tubs at the close of the period, an estimate should be made of the quantity of prepared size which the glue stock in the tubs will yield. This estimated quantity should be added to the inventory of prepared size on hand, not only in the tanks but also unused at the paper machines. An inventory of rosin size should also be taken and forwarded to the Cost department.

A Size Cost Summary card (Fig. 25) is to be used to assemble the various items entering into the cost of animal or rosin size made during each period, in order that an average cost per pound of paper sized may be obtained for pricing animal size consumed during the succeeding period. With this record, the actual quantity of animal size used during the period determined by means of inventories, may be compared with the standard value of animal size charged to cost. The record should also be used to prepare journal entries, charging and crediting the various controlling accounts in the general ledger with the totals of materials and burden entering into the cost of the size made.

At the close of each period, a Size Cost Summary card should be headed up for each kind of size made. The totals, both as to pounds and cost of dry glue, animal hides and chemicals (rosin paste included with chemicals) should be obtained from a summary of the Material Used Register sheets and recorded opposite items Nos. 1, 2 or 3, as the case may be, and the total material cost shown as Item 4. General Stock Handling and Storage burden are obtained by applying the burden rate for that class of expense; while the Preparing Size burden should be obtained from a recapitulation of the actual burden charges accumulated for the period as disclosed by the Comparative Statement of Burden sheets (See PAPER INDUSTRY, December, 1926; page 1551, Fig. 14.)

SIZE COST SUMMARY

WEEK PERIOD ENDING KIND

NO	ITEMS	GALLONS	POUNDS	UNIT	TOTAL COST
1	DRY GLUE				
2	ANIMAL HIDES				
3	CHEMICALS				
4	TOTAL MATERIAL COST				
5	GENERAL STOCK H AND STORAGE				
6	PREPARING SIZE BURDEN				
7	TOTAL COST				
8	AND-INV. AT BEGINNING OF PERIOD				
9	TOTAL				
10	DEDUCT-INV. AT END OF PERIOD				
11	BALANCE (USED DURING PERIOD)				
12	SCALE WEIGHT OF PAPER SIZED				

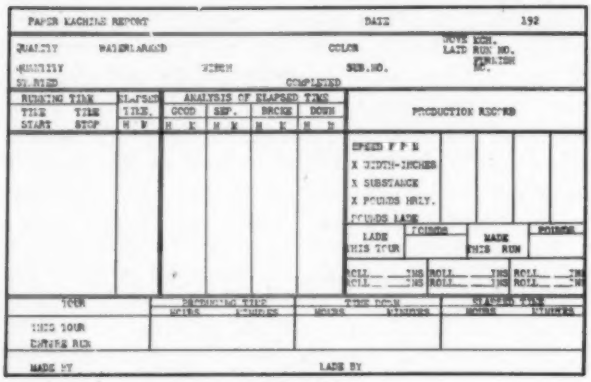
Figure 25

Total material cost and burden should be added and recorded opposite Item 7, Total Cost; while opposite Total Cost (Item 7) and under the column "Gallons," should be posted the total gallons made during the period as obtained from a summary of the hide yield record, as shown on the size batch reports for batches made during the period. To the total cost should be added the inventory, both as to gallons and cost, on hand at the beginning of the period. From the total of size made and on hand at the beginning of the period, the inventory (gallons only) on hand at the end of the period should be subtracted; the balance (gallons only) thus obtained will show the quantity consumed during the period. Opposite Item 11, Balance, and under Total Cost should be recorded the standard value of animal size charged to lots of paper made during the period and obtained from a recapitulation of Lot Cost Summaries (Rough Paper). Item 11, Cost only, subtracted from Item 9 will furnish the value of the quantity on hand at the end of the period. All unit costs should be struck and comparison made between the unit cost of mak-

ing size and the unit cost of size charged to lots made (standard basis) and the price determined for the next period.

Lot Cost Summaries

The essentials of modern industrial organization are authority and responsibility. Every order of whatever nature must be issued by some authority.


PAPER MACHINE REPORT DATE 192

QUALITY WATERMARKED COLOR MACH. RUN NO. LAST RUN NO. FURNISH NO.
QUANTITY WIDTH SUB. NO.
SQ. RIZED COMPLETED

RUNNING TIME		ELAPSED TIME	ANALYSIS OF ELAPSED TIME								PRODUCTION RECORD
TIME START	TIME STOP	TIME H	M	GOOD H	M	REP. H	M	BROKE H	M	DOWN H	M	
											SPEED F P M X WIDTH-INCHES X SUBSTANCE X POUNDS HRLY. POUNDS MADE
											LADE THIS TOUR / POUNDS; MADE THIS RUN / POUNDS
											ROLL ___ ___ LBS ROLL ___ ___ LBS ROLL ___ ___ LBS ROLL ___ ___ LBS

TOUR	RECEIVING TIME HOURS	MINUTES	TIME DOWN HOURS	MINUTES	ELAPSED TIME HOURS	MINUTES
THIS TOUR						
DATE& RUN						

MADE BY LADE BY

Figure 26

The preparation of production orders is the most important function of the management and all records designed for such purpose should be clear and simple in order to reduce the possibility of errors to the minimum.

The form of the production order will vary in accordance with the requirements of the various plants and may be issued to maintain maximum stock requirements, or for the manufacture of special orders to conform with customers' specifications.

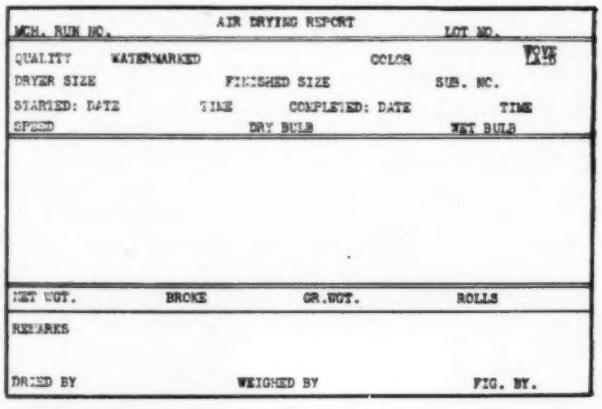
The Paper Machine Production order may be of very simple construction and so designed to show the date issued and quantity desired, together with a description of the paper to be made, as well as such instructions as the superintendent may wish to give the machine tender. It is a good plan to issue production orders to the paper machine for each run, designating the machine and furnish numbers. Run numbers should run serially, thus serving as a guide to the machine tenders as to the proper sequence in which the orders are to be made.

The Paper Machine Production Order should remain with the machine tenders until the run has been completed and should be used not only as a record of uncompleted orders, but also for reference in making out Paper Machine Reports. The return of the form to the superintendent's office will serve as a notice that the order has been completed.

The Paper Machine Report (Fig. 26) is to be made out by the machine tenders, one set being used to record all the required data for each run. The date, furnish number, machine run number and a description of the paper will appear at the top of the form as provided for.

The left hand portion is used as a log to record the successive starts and stops of the paper machine; the hours the machine has been in operation being recorded in the column headed "Elapsed Time." An analysis of the elapsed time will be shown separately. For example: assuming that the time from 7:00 A. M. to 11:00 A. M. is required to make ready, the machine tender will record these hours as Time Start and Time Stop, and the elapsed time of four hours recorded in the column headed Elapsed Time and also in the column "Down," in the Analysis of Elapsed Time, section. From 11 A. M. to 1 P. M., the paper machine has been making good paper, in this case two hours would be recorded in the column "Good." On the same line in the column headed "Speed" (feet per minute) will be recorded the speed of the machine while making this portion of the run. From 1 P. M. to 3 P. M. the elapsed time of two hours would be recorded in the column headed "Elapsed Time"; of this time one hour and fifty minutes have been spent making good paper which would be recorded in the column "Good," the speed being indicated as previously described. Ten minutes of the two hours were spent in making paper of doubtful quality and designated as "Keep Separate," this time being recorded in the column headed "Separate." Assuming that instead of the quality of the paper made being doubtful, it was of no value at all, the machine tender would have then recorded the ten minutes in the column "Broke." Successive starts and stops would be similarly indicated.

In the section of the form headed "Production Record," the machine tender should record the ma-


MCH. RUN NO. AIR DRYING REPORT LOT NO.

QUALITY WATERMARKED COLOR

DRYER SIZE FINISHED SIZE SUB. NO.

STARTED: DATE TIME COMPLETED: DATE TIME

SPEED DRY BULB WET BULB

NET WGT. BROKE GR.WGT. ROLLS

REMARKS

DRIED BY WEIGHED BY FIG. BY.

Figure 27

chine speed, the width of the sheet in inches and the substance. By multiplying the speed (feet per minute) by the width and by the substance, the pounds per hour will be obtained, this multiplied by the total hours producing paper will designate the quantity made.

The width of the paper as made on the paper machine may be cut to smaller widths after drying. To properly control this operation, an air, or machine drying production order should be designed. In addition to showing the date issued, lot numbers should

be shown. A number should be used to cover each different width cut from each machine run. Provided such numbers run serially, they serve as a guide to the air dryer tender, as to the sequence in which it is desired orders should be run. A description and the quantity of the paper required should be indicated as well as such other instructions as the superintendent may wish to give the air dryer tender.

The Air Drying Report (Fig. 27) should be completed by the air dryer tender, a report being made out for each lot processed, indicating the date, lot number, machine run number on which made, as well as a description of the paper. Space has been provided in which the time started and completed may be shown. It may be advisable to base the machine drying rate on a machine-hour basis, in preference to a pound basis.

After drying, rolls of paper should be weighed and the weight of each roll recorded in the columns provided on the Air Drying Reports by lots. These reports should then be forwarded to the Cost department.

The cost of rough paper made will be collected on Lot Cost Summary cards—Rough Paper (Fig. 28). A ten-position tab card has been designed for this purpose, so that these cards may be quickly located by lot numbers.

The total quantity and cost of rough paper made on each run will be recorded in the section of the card headed "Machine Run Cost." A description of the paper processed under each run number should be indicated at the top of the card. Stuff cost recorded as Item 1, will be obtained from the Stuff Cost Summary cards (see stuff cost summaries) for the furnish from which the stuff was used. The standard consumption of animal size used in making each run of paper is calculated, using a rate per 100 pounds of rough paper made, as described in connection with size cost summaries. Paper machine and air drying burden are recorded as Items 3 and 5, respectively and the total cost brought down as Item 7. The total cost of rough paper produced divided by the total weight produced, Item 1, from

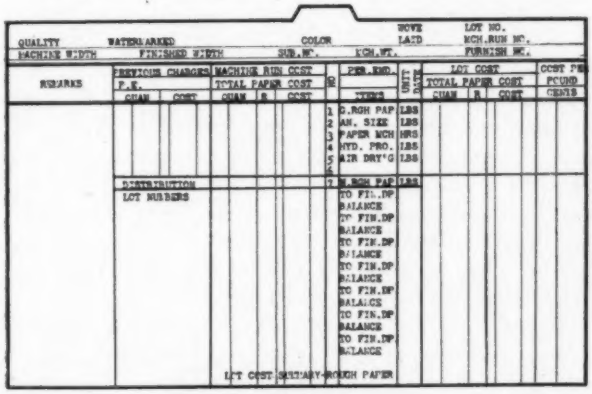


Figure 28

Air Drying or Loft Reports for the run, furnishes the cost per pound of rough paper.

The lot number and quantity of paper made on each lot included in the run should be recorded in the left-hand section of the card, headed "Distribution." The total cost of the machine run should then be prorated to the various lots which have been made

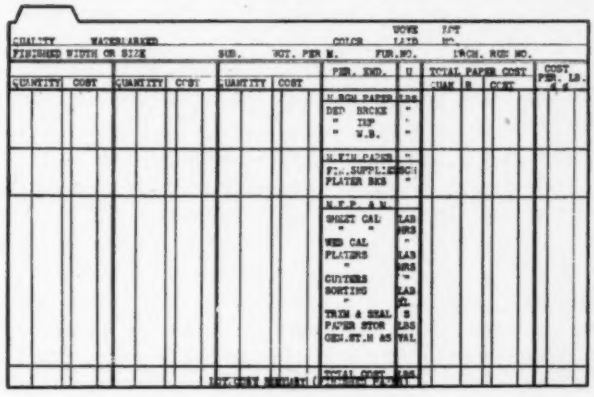


Figure 29

up from the run on the basis of the weight of rough paper in each lot.

A lot Cost Summary card—Rough Paper (Fig. 28) should be headed up for each lot included in the run. The card which contains cost data relative to the machine run (master card) may be used to record the total quantity and cost of the first lot appearing in the Distribution column. The total pounds and cost are posted as Item 7, under the column "Lot Cost," for inventory purposes only, and cards made for each additional lot, each card bearing a description of the paper as indicated, together with the lot, machine run and furnish numbers.

It may happen that a lot may be composed of an entire machine run. In such a case, it is desirable to calculate the cost in the section headed lot cost instead of in the Machine Run Cost section.

Rough paper started in one period may be carried over into a succeeding period. An extra column designated "Previous Charges" has been provided so that each item entering into rough paper cost may be recorded separately by periods. This column will be used in the same way as the extra period columns described in connection with Half Stock Cost Summaries.

Rough paper delivered from the loft or air dryer may be run through successive finishing operations to completion without being placed in rough storage, or on the other hand, it may be taken to rough paper storage and kept there, being finished from time to time in smaller quantities.

As each lot or sub-lot of rough paper is drawn from storage, a Finishing Order should be issued by the Finishing department, bearing a production order number corresponding to the lot number from which the rough paper was drawn.

A daily report should be constructed and so designed to permit recording the quantity as well as a brief description of all rough paper removed from storage and delivered to the Finishing department. These reports should be forwarded to the Cost department daily and there used as a posting medium to the perpetual inventory records of rough paper (Lot Cost Summary cards—Rough Paper, Fig. 28).

As each order is issued, a Lot Cost Summary card —Finished Paper (Fig. 29) should be headed up. The quantity and cost of rough paper delivered to the Finishing department being recorded as Item 1 (Net Rough Paper), from the Lot Cost Summary card—Rough Paper, (Fig. 28) covering the rough paper cost of the original lot. The quantity and cost of the first lot delivered will be deducted from the quantity and cost of the whole lot, the balances being shown. Similarly, the quantity and cost of each succeeding lot delivered will be deducted from the previous balances of quantity and cost and a new current balance shown. Thus cards for lots of rough paper in storage should show at all times the quantity and cost of rough paper actually in stock, together with a brief description of the lot.

A Finishing Report (Fig. 30) should accompany each lot or sub-lot of paper as it passes through successive finishing operations to completion. The scale weight of rough paper delivered to the Finishing department is recorded in the column headed, "Rough Paper to Finishing Department." After finishing, sorting and counting, but before trimming, the paper

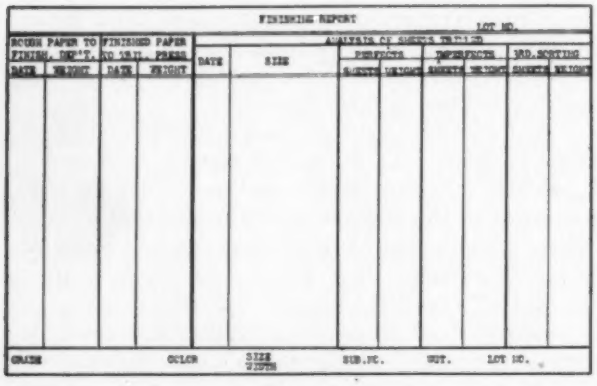


Figure 30

should be again weighed, to determine the shrinkage, and the weight recorded in the column "Finished Paper to Trim Press." When trimmed to size, wrapped and sealed, it is again weighed and the quantity and scale weight placed in one of the sets of columns under Sheets and Weight; the column selected depending upon whether the paper is perfect, imperfect or third sorting.

A summary of sizes and the number of sheets of the three sortings should be made on the Finishing Report before posting this information on the back of the Lot Cost Summary card (Fig. 31) under the section "Analysis of Packages Trimmed." Here the sheets will be converted to 1,000 sheet packages and the nominal (or standard) weight calculated and recorded in the column, "Pounds."

The detail as to chargeable hours and direct labor cost for the calendering, plating cutting or sorting operations for each lot should be posted daily to the

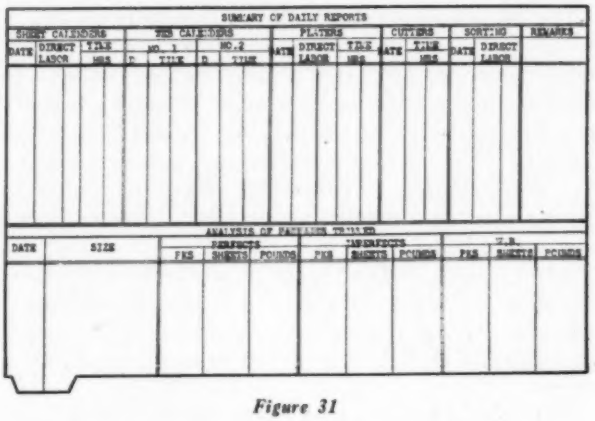


Figure 31

back of the Lot Cost Summary card (Fig. 31) in the section, "Summary of Daily Reports."

The daily operation reports should be so designed as to permit recording the time start and time finish or stop, to the nearest quarter of an hour. For example: Assuming that the sheet calender was working without interruption from 7 A. M. to 9:15 A. M., these times would be recorded as 7 and 9 respectively in the proper columns and 2 (2¼ hours) would be carried to a column headed chargeable hours; from 9:15 A. M. to 9:45 A. M., it is assumed that the calender was not working because of finger trouble, the elapsed time would be recorded as half an hour and the cause stated; from 9:45 A. M. to 12 A. M., the machine is assumed running again and the time recorded as above indicated. It will thus be seen that such a report constitutes a log of the operation of each machine for each day. The lot number, size of paper run and substance together with the weights should likewise be shown.

At the close of each day, these reports should be forwarded to the payroll department where earnings will be calculated for payroll purposes. If the operators are working piecework, the piecework rate should be indicated in a column provided and the earnings extended; on the other hand, if the operators are working day rate, the chargeable hours column should be footed, the day rate shown and the total earnings extended. These reports should then be used for posting to the payroll after which they are sent to the Cost department where the detail as to chargeable hours and labor costs are posted to the back of the corresponding Lot Cost Summary card in the section designed for Sheet Calenders. It should be noted that the chargeable hours for each lot should be doubled when posting to the back of the Lot Cost

Summary cards, since two girls work at each calender.

Daily Plater Operation reports will be used for the plater girls in a manner similar to that described in connection with the sheet calenders. The date, the names of the girls working at each table, and the table numbers should be recorded. Time start, time

DAILY WEB CALENDER REPORT

DATE

OPERATOR WEB CALENDER NO.

RUNNING TIME START	RUNNING TIME STOP	ELAPSED TIME	TIME DOWN HOURS	TIME DOWN CAUSE	HOURS CHARGED	LOT NO	WIDTH	SUB	QUANTITY

Figure 32

finish or stop, chargeable hours; time down (hours and cause) the lot or sub-lot number size of paper and substance will be entered in the columns provided.

When a book has been assembled by the plater girls, a card should be placed with it showing the table and lot number. As books are passed to the platers, these cards will be removed and dropped into a box. At the close of the day, the cards will be removed, sorted to table number and sub-sorted to lot number and the number of books made by each table on each lot thus obtained. This total in each case will be recorded on the proper form opposite the corresponding lot number. The sheets in each book should also be shown and the total sheets in each case extended.

Daily Plater Operation reports for the platers should be turned in to the payroll department daily, the earnings calculated and extended, using a rate per 100 sheets, depending upon the size and weight of paper run. Earnings should then be posted to the payroll, after which the labor costs and chargeable hours will be entered on the back of the Lot Cost Summary card in a similar manner to that described in connection with the sheet calenders. Chargeable hours should be doubled, since two girls work at each table.

A value should be determined for each plater book assembly and an estimate made of the number of hours service which each plater book assembly may reasonably be expected to give. The plater book value divided by the number of service hours, will give a rate per "bookhour" by means of which plater books will be charged currently to cost, and credited to account B-11 Plater Books. The book hours chargeable to each lot will be the chargeable hours recorded on the Daily Plater Operation Report. Plater book hours is half the man-hours.

A Daily Sorting Report should be made out for each sorter each day, showing the date and the sorters' name. The lot or sub-lot number and a brief description of the grade, size and substance of the paper worked on. The quantity of perfects, and imperfects should be entered when counted and extended to the total column.

At the close of the day these reports should be likewise sent to the payroll department where earnings will be calculated and posted to the payroll, after which they will be sent to the cost department where the labor cost only of each lot will be posted to the back of the Lot Cost Summary card in the "Sorting" section. Daily sorting reports should then be temporarily filed and used for the payroll distribution together with the Daily Sheet Calender and Plater Operation Reports.

Daily Web Calender Operation Reports (Fig. 32) and Daily Cutter Operation Reports will be used by the web calender and cutter operators in a manner similar to that described for the Daily Sheet Calender Operation Reports. The labor cost will not be chargeable to lots run, but will be charged to the standing order numbers for miscellaneous indirect labor as explained in connection with the payroll distribution.

On Lot Cost Summary cards—Finished paper (Fig. 29) the quantity of finishing "broke" made from each lot will be obtained by deducting from the total weight delivered to the Finishing department, and

GRADE WATERMARKED

YEAR OF SALES LAST YEAR

SUMMARY OF RECEIPTS AND SHIPMENTS

PERIOD	ITEMS	POUNDS	UNIT	AMOUNT	PERIOD	ITEMS	POUNDS	UNIT	AMOUNT
	BALANCE					BALANCE			
	RECEIVED					RECEIVED			
	TOTAL					TOTAL			
	SHIPPED					SHIPPED			
	BALANCE					BALANCE			
	RECEIVED					RECEIVED			
	TOTAL					TOTAL			
	SHIPPED					SHIPPED			
	BALANCE					BALANCE			
	RECEIVED					RECEIVED			
	TOTAL					TOTAL			
	SHIPPED					SHIPPED			
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	SHIPPED					SHIPPED			
	BALANCE					BALANCE			
	RECEIVED					RECEIVED			
	TOTAL					TOTAL			
	SHIPPED					SHIPPED			
	BALANCE					BALANCE			
	RECEIVED					RECEIVED			
	TOTAL					TOTAL			
	SHIPPED					SHIPPED			
	BALANCE					BALANCE			
				FINISHED STOCK LEDGER					

Figure 33

recorded as Item 1, the standard weight of Perfects, Imperfects and W. B. (third sortings) as recorded on the back of the card. Finishing broke should be entered as Item 2. Imperfects and W. B. paper will be recorded as Items 3 and 4, respectively. Finishing broke and imperfects and W. B. should be priced at a standard price, which will depend upon the market price obtainable for broken and imperfects respectively. The total of Items, 2, 3 and 4 as to quantity and cost will be deducted, and the balance shown.

The burden for the subsequent finishing operations, Items 12, 13, 15, 16, 18, 19 and 20 will be

similarly calculated and the direct labor chargeable to lots will be obtained from a summary of the daily operation reports as recorded on the back of the card. The total labor and calculated burden will then be carried to the column headed "Total Cost," Item 24. General Stock Handling and Storage Burden will apply to such additional items of finishing supplies as wrapping paper, boxes for typewriter paper, etc. These supplies which will be charged direct to lots on the basis of a schedule will be recorded as Item 7. Plater books will also be charged to cost on a schedule basis and entered as Item 8. The total cost of the lot will be entered as Item 24. The total cost divided by the pounds (standard weight) of finished paper (net) produced will give the cost per pound of finished paper.

A column has been provided at the right of the card in which to record unit costs in a similar manner to that described in connection with Stuff Cost Summary cards. The unit cost in this case would be the cost per pound of rough paper produced (Lot Cost Summary cards—Rough Paper) or the cost per pound of finished paper (Lot Cost Summary cards—Finished Paper) in each lot or sub-lot finished. By comparing the unit cost of each lot with those lots previously put through in similar grades, weights or sizes of paper, any fluctuation in unit costs may be noted, and if these fluctuations show a very wide variation the cause should be investigated.

Extra columns have been provided to take care of the possibility of lots or sub-lots started in one period being completed in a subsequent period. In this case the figures for quantity and cost for each item relating to the first period will be recorded in the extreme left hand column and similar figures for the subsequent periods should be entered in the second and third left-hand columns. Each of these columns will be headed, showing the date at which each period ends. When the lot has been completed, the figures corresponding to each item should be cross-footed and entered in the section headed "Total Paper Cost."

A Register of Lot Cost Summaries will be used to collect currently the various items entering into the lot cost of paper in process. The data to be posted are obtained from Lot Cost Summary Cards, for lots of paper completely finished during the period without going into rough paper storage; for lots completed to rough paper and placed in storage during the period; for sub-lots drawn from rough paper storage during the period; and from uncompleted lots and sub-lots at the close of the period. At the close of the period the various columns should be footed and the sheets balanced, the totals thus obtained being used as a basis for a journal voucher charging and crediting the inventory and burden accounts affected.

All lots or sub-lots completely finished during the period should be recorded in a separate column (Finished Paper Made) on the Register of Lot Cost Summaries. At the close of the period a recapitulation should be made and account B-18 Finished Paper charged, the offsetting credit being to account B-17 Paper in Process.

Finished Stock Ledger

A Finished Stock Ledger card (Fig. 33) should be maintained for each grade of paper manufactured. Space has been provided at the top of the card to record the sales (pounds) for the previous year.

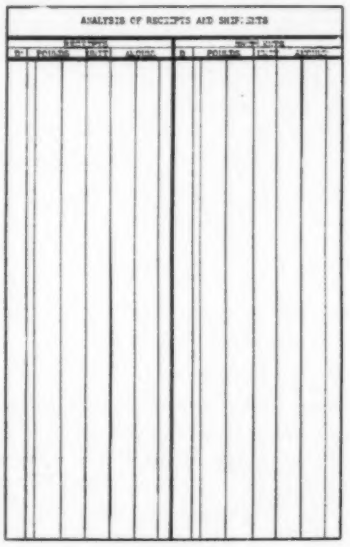


Figure 34

At the close of the period the quantity and cost of finished paper made during the period will be obtained from the Register of Lot Cost Summaries, as explained above. The date, pounds and total cost should be recorded on the back of the Finished Stock Ledger Card (Fig. 34) under the section headed "Receipts," together with any other charges to the finished paper account, such as ruling, etc. The receipts should be totaled, both as to pounds and cost and carried to the face of the card and entered on the line designated "Received" as an addition to that already on hand, making a new total for pounds, unit cost and total cost.

A Cost of Goods Sold Register sheet should be provided and one set of sheets headed up each period for each grade of paper sold. This form should be so designed to permit showing the case number, invoice date, and invoice weight of the paper sold during the period. Provision should also be made to permit recording items cut from larger to smaller sizes, thus showing the actual loss sustained from this practice.

At the close of the period the total invoice weight of paper sold during the period will be priced at the unit (average) cost per pound of paper on hand at the beginning of the period plus additions during the period. The total pounds and cost of sales should be entered similarly to the manner described for receipts, but in the section on the back of the card designed for shipments.

Finished paper used during the period for sample sheets, forms, advertising, etc., should be recorded and priced in a like manner. The totals as to pounds and cost for both sales and paper used for miscellaneous purposes will be carried to the face of the

card and recorded on the line headed "Shipped" and deducted from the running balances of pounds and cost and new balances stated.

A recapitulation of the cost of sales, will form the basis for a charge to Account H—Cost of Goods Sold (Normal Basis), the offsetting credit being to Account B-18 Finished Paper. Finished Paper used for miscellaneous purposes should be charged to operating, Administrative or Selling Expense Accounts, as the case may be, the offsetting credit being to account B-18 Finished Paper.

A trial balance of the Finished Stock Ledger should agree at the close of each period with the balances in the controlling account B-18 Finished Paper, in the general ledger.

A Problem in Head Box Control

Answered by HARRY WILLIAMSON
Class Instructor, Champion Fibre Co.

In the January issue of THE PAPER INDUSTRY, *Mr. Williamson's Lesson VIII discussed "Head Boxes and Their Control." A paper mill in the East was having a problem with Head Box control, and addressed Mr. Williamson, who submitted the attached discussion and diagrams as a solution for the problem.*

We are publishing this discussion in the belief that some other mill in the industry having a similar problem, will profit from the solution offered.—Editor.

QUESTION—"Although we are essentially a cylinder machine mill, we have in the past year or so started the manufacture of heavy weight fourdrinier rope sandpaper on a 110-inch Bagley & Sewall machine.

"We make rather a wide range of weights on our fourdrinier, and our main difficulty lies in securing good formation and tests on the 130 lb. paper.

"If you will send us a sketch of such a head box as that shown in Figure 38, with your recommended dimensions, same will be greatly appreciated."

Before the sketches and suggestions were made, the following information was asked for:

1—Are flat screens or rotary screens in use?

2—What is the comparative height of screens and slice?

(He added that on the question of comparative height, it was sometimes found that the screens are set lower than the level of the highest head carried.)

3—Is one slice or two used?

4—Where is delivery made?—on breast roll or center of the tube roll?

Owing to the illness of Mr. Harry Williamson, Class Instructor of the Champion Fibre Co., and author of the "Lessons in Paper Making," which have been appearing each month in THE PAPER INDUSTRY, *Lesson XI on Variables, continued from the last issue, is omitted in this number. Best wishes are extended to him, and the hope that he will be in a position to resume the series in the next issue.*

Figure I from the inquirer shows the approximate lay-out and relationship of their screen flow boxes to the fourdrinier head box, breast roll, slices, etc.

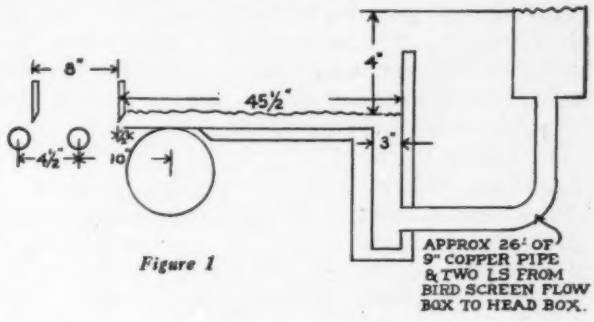


Figure 1

A Bird rotary screen is used, and two slices as shown in the sketch. Figures II and III present Mr. Williamson's suggestions for solution, together with the following discussion on the problem:

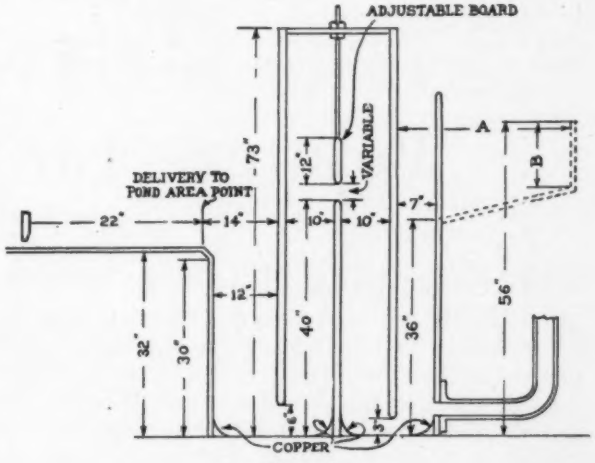


Figure 2

Answer—The head box shown in Figures II and III will give control of the mixing volume to provide adequate suspension of fiber for the basis weights from 130 lb. to 35 lb. Note that the normal position of the underflow baffle board is rated respectively 3" and 6" from the bottom of the head box. The width between baffle boards starts at the rear with 7", increases to 10", is again 10", increases again to 12", and finally as the volume is delivered on a horizontal plane, increases to 14".

This arrangement maintains the compression of the volume and consequent currents and mixing in the rear compartments, gradually releasing the compression and nullifying forward speed until the deliv-

ery point to the pond area is reached, thus giving a pond free from speed, except that given by the flow weight of volume in the pond area.

From Figure I, it is seen that delivery is being made from the screen to the bottom center of the rear compartment. The suggestion is made that this method of delivery be maintained, as on heavy papers it is extremely difficult to get an even mixing, and a bottom inlet helps considerably.

In Figure II, the dotted area will give still greater mixing facilities. If space does not permit the use of this area, merely extend the height of the back wall of the box as shown.

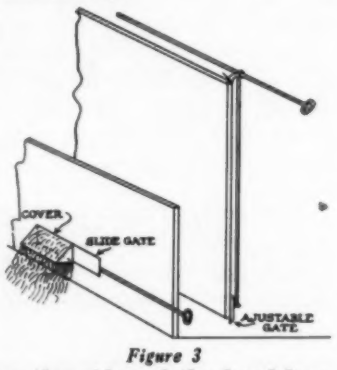


Figure 3

The adjustable board is held in position by beveled guides super-imposed on the sides of the head box. They should not extend either above or below the board. In operation, however, it will be found that on the lighter basis weights, a variable distance to a maximum of two inches space between the adjustable board and its baffle board will give best control, while on the heavy weights, the board should be hard down, thus increasing the depth of the volume in the rear compartments. The adjustable gate as shown in Figure III is similarly operative.

Figure I shows a pond area of 45½ inches with a box width of 3 inches. The compression in this small box area necessitates the long pond area. In the new box, however, this necessity will be obviated. Therefore, a pond area of 36 inches is suggested, 14 inches being the width at the delivery to a horizontal flow, and the remaining 22 inches from this point to the slice. Space thus conserved can possibly be used as outlined in the dotted area in Figure II.

Figure III is a suggestion for quick emptying in case of an emergency. It is merely a slide gate working in brass slides fitted on to the front wall of the box. A wooden cover prevents the rush of volume from striking the wire when emptying. It is very useful, should the wire stop, as sometimes happens on heavy weights, clearing the wire almost instantly.

Pointers for the Engineer

By W. F. SCHAPHORST, M.E.

Belt Flapping Causes Stress

A RECENT article of mine on "Flapping Belts" is criticized because I made the statement that a flapping belt may cause more stress on the slack side than on the tight side. The critic said that the tension would be the same on both sides because "the belt going around the pulleys is in one piece and the stress would equalize."

The reasoning by this gentleman is incorrect because the stress created by a flap in a belt is equivalent to the stress created by a sharp blow.

It is possible to break any ordinary belt in two by striking it on the slack side with sufficient force. It will not break on the tight side. The high stress will not go around to the tight side, owing to the friction existing between the belt and the pulleys. This is true of any belt that possesses a reasonable coefficient of friction. If the force of a blow could be made slow, and if the force were great enough, there would be some equalization, true, but it would not completely equalize because there is always some friction in all belts—even the poorest.

Everybody is familiar with the phenomena of "cracking a whip." By cracking the whip, sufficient stress is often created in the tip of the whip to break the tip off. That high stress certainly does not exist in the portion of the whip held in the hand. The reason is that the velocity at the point of the whip is suddenly stopped, and the tip of the whip has a tendency to continue going, and when its velocity is great enough it does continue going by breaking off. Yet the whip is "all one piece." I have heard that it is possible to snap off the head of a snake in this same way. Whether or not that is true I do not know, as I have never witnessed the performance, but I know that I, myself, have snapped off the tip of a whip, and I can see no reason why it would not be possible to also snap off the head of a snake. Yet the snake is "all one piece." The stress at the head end of the snake must, therefore, be greater than at the tail end or the head would not fly off.

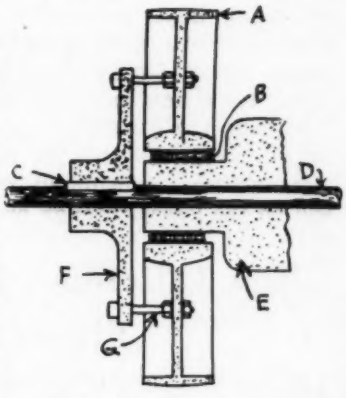
This same reasoning applies to many other things. For example, in driving wooden or metal piles, the reason why the top of the pile "brooms," and the reason why the metal is crushed at the point of contact with the hammer, is due to the fact that the stress is greater at the point of contact than anywhere else. Yet the pile is "all one piece." This is due entirely to the weight of the pile. If the pile did not possess weight, and if there were no such thing as inertia, the stress would be the same throughout the entire length of the pile.

Light does not possess weight. Light will strike a mirror at velocity of thousands of miles per second and rebound at the same rate without any brooming, breaking, or stress whatever. If light possessed weight, it "couldn't be done."

Eliminating Shaft Deflection

AN excellent way in which every bit of belt pull can be eliminated from shaft bearings is shown in the sketch herewith. Shaft deflection due to belt pull is therefore eliminated also. This method requires less space, and instead of two additional bearings, as are sometimes used, there is only one—a roller bearing which consumes less power than any ordinary plain bearing.

The sketch shows how, by turning down the housing (E) of the motor if possible, or by casting such a housing and attaching to the motor and then mounting the pulley on this housing, and equipping with roller bearings (B) between the pulley and hub, all the belt pull falls directly upon the shaft housing. The flexible coupling (F) shown at the left is keyed onto the shaft (D) and is connected to the pulley (A) by means of bolts (G) or by other methods familiar to all who use flexible couplings.



By applying this method there can be no binding or deflection in the shaft, and friction is reduced to the minimum. No more space is used here than when the pulley is placed as it often is, on the end of the shaft, thereby giving the undesired overhang. With this method the force on the shaft is purely a twisting or torsional action—an ideal condition. The only bending is that caused by the weight of the shaft itself plus whatever the shaft supports.

If desired, ball bearings may be used in place of the roller bearings shown. Or, if roller or ball bearings are considered too expensive, simply use a plain bearing instead of the anti-friction type. In any event, this arrangement is more satisfactory than where we have an overhanging pulley. Its first cost may be greater, but in many instances first cost is of much less importance than space and power saving.

Belt vs. Electric Drive

TO those who lament the "passing of the belt," I present the following actual figures for consideration.

I notice in the Commerce Yearbook for 1925 that $37,723,000 worth of leather belting was produced by leather belting manufacturers in the United States during 1923. It is stated that there was an increase of 96.8 per cent in the value of products, and 39.4 per cent in wage earners as compared with 1921.

The exact increase in use or value of electric motors does not appear to be given in the book, but I dare say the increase during that time was NOT as much as 96.8 per cent. Under "Electric Light and Power," I find that the total production of electricity in 1921 was about forty-one million kw. hrs., while in 1923 it was less than fifty-six million kw. hrs. My slide rule shows that the increase was exactly 36 per cent, which is considerably less than the 96.8 per cent for belting.

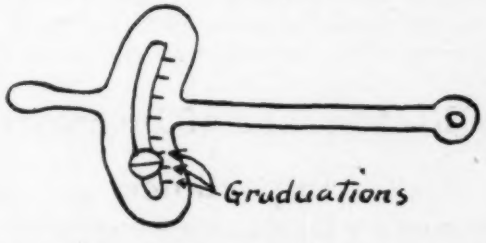
Increase in the use of motors often means that there is a corresponding increase in the use of belts because the motor is belted to several machines, as in group drives. And very often the motor is belted to a single machine instead of being directly connected.

Inasmuch as belt drive can easily give an overall efficiency of 95 per cent while that of electric drive is seldom better than 80 per cent, why shouldn't belt drive show the greater advance?

A Fuel Saving Kink

THE other day a friend of mine, who is a mechanical engineer, showed me a fuel-saving kink which he is employing on his boiler. The idea is sketched herewith.

Most boilers which are provided with damper regulators are equipped with a lever device placed in a convenient position for opening and closing the damper. However, the operator has to go about it



more or less blindly, or by guess, and does not know from the appearance of the handle or lever the exact amount the damper is open. Therefore, it is not accurate.

This engineer carefully measured the opening of the damper and made graduation marks on the lever as indicated—each graduation representing a half inch or a full inch of opening. On his boiler, as I remember, each mark represented a full inch. Now he knows exactly what's what.

He stated that since making use of these graduations he has been able to regulate the amount of air admitted into the boiler much more accurately than heretofore and he has made a substantial reduction in the amount of fuel burned.

It takes only a few minutes to measure damper openings and make graduations of this kind, and it is well worth while.

Editorial Comment

By WILLIAM SIBLEY

Economies Not Lost in Transit

ACCORDING to a recent survey, of the total output of electric power during last year, about 23 billion kw. hours, or 32 per cent, was produced by water power, the balance, or 68 per cent, being produced by fuel power. A total of only 260,000,000 kw. hours was produced through the use of wood. To generate the 68 per cent of all electric power produced there was required, in round numbers, a total of 40 million short tons of coal, 10 million barrels of fuel oil, and 47 billion cubic feet of natural gas. These figures represent, respectively, an increase of 7 per cent in coal, and decreases of 38 per cent in oil and 4 per cent in gas consumed over the preceding year.

The splendid progress in general combustion practices is evidenced by the fact that while increasing power production over 10 per cent, coal consumption increased only 7 per cent, while gas and fuel oil consumption decreased from one-twentieth to one-third. Improving power plant practices is one of the sure ways to increase profits since there are no intermediate steps that may absorb the economies. To reduce the amount of coal consumed means to immediately reduce the amount of money paid out. Power plant economies reflect themselves directly to the ledger.

Obsolescence of Increasing Importance

SO RAPID is our present day progress that even the definition of terms must be altered to meet changing conditions. "Amortization," as it relates to equipment for instance, is that sum annually set aside to provide a fund for the purchase of replacement machinery when such is needed. Ordinarily, the life of machinery is estimated at 10 years, and therefore the annual amortization charge is one-tenth of the original cost. But the rapidity of change in equipment, brought about through development or improvement, makes necessary the modification of this definition. No longer is it safe to base amortization on machine life alone, since the demands of progress may require the replacement of such machinery long before it has worn out.

The producer who installs a certain type of machine may, three or four years after its purchase, find it necessary in the interest of sheer existence, to abandon his new installation in favor of improved equipment or totally different methods. His machinery must be sold at great sacrifice therefore, with the result that the real amortization period is 3 or 4 years instead of 10.

Thus the factor of obsolescence is becoming one of increasing importance. The tendency throughout all industry is to shorten the effective life of mechanical equipment—to fix production costs in consideration of the almost indeterminate amortization period. Naturally, the clearer the vision one can obtain of future operations and the farther in advance the manufacturer can definitely assign his plans, the less will be the losses through obsolescence.

How Efficiency Percentages Fluctuate

BROADLY speaking there are only two ways in which operating and production costs can be reduced—by improvement of physical equipment, and by development of better methods of operation. The proper determination of the amount of money or effort expended in each of these two ways is the duty of every industrial executive.

This principle is well proved by a study of efficiency percentages. For instance, we may consider a plant that is equipped with machinery which, when perfectly operated, is capable of 85 per cent efficiency as compared with the best on the market. If the men operating this machinery are only 65 per cent efficient, the production result will be 65 per cent of 85 per cent, or about 55 per cent. Then, without change in the physical equipment of the plant, if the human element could be lifted to give, let us say 100 per cent efficiency, the production result would jump from 55 per cent to 85 per cent, an increase of 30 per cent.

On the other hand, if only the machinery efficiency is changed to 100 per cent, leaving the human factor unchanged, we get an increase in production of only 10 per cent. This increase has to be paid for by new expenditures and investments, whereas the improvement in the human factor can be effected by a comparatively small increase in outlay, since the wages are about the same on either scale of efficiency.

Not only does the above prove the value of lifting, wherever possible, the efficiency of the human factor, but it serves to indicate why one plant, with poorer equipment and facilities than its neighbor, can still sometimes show lower production costs. While automatization has made great strides, we haven't as

—— on Timely Subjects

yet progressed to the point where plants can be operated without the aid of human labor. So long as this remains the case, let us not overlook the human factor in our search for higher production.

Is Your Boy a Scout?

THIS is a subject somewhat extraneous to "cold-blooded" business and one that is seldom discussed in trade journals, but it none the less concerns the business of the future.

Your boy will soon be entering upon his summer vacation from school. Are you going to let him drift through the hot-weather months, seeking employment and diversion as he may, or are you going to help him get the maximum from his summer vacation?

Only in so far as it can adapt itself to changing circumstances and conditions can civilization hope to gain in strength or elevate its own level. Of late we have witnessed the advent of far-reaching changes with increasing rapidity. From an agricultural nation we have changed to an industrial one and only since 1900. Every Anglo-Saxon woman has become enfranchised only within the past 25 years. Hens are now laying five eggs a day instead of one, and the span of life is 57 instead of 38. In place of houses with back yards for homes and collie dogs for companions such as we had, our boys now have apartments for homes and either the movies or motor cars for companions. The high school gym has replaced the hay mow and the gilded jazz palace has supplanted the barn dance. Whether or not this transition is good is beyond discussion in this editorial. The fact remains, while civilization has changed, human nature has not. The 1926 boy has just as much noise and energy bottled up in him as the 1895 boy, and, being boys, that energy must be expended and that noise must come out—else cynics and criminals will be made.

The Boy Scouts of America provide the outlet for this energy and noise, and they are doing it in the proper and healthy manner. If there be any doubt regarding the accuracy of that statement, let the doubting one search the juvenile criminal court records of the country and ascertain for himself the percentage of Boy Scouts among the total number of delinquents. Over 120,000 boys have been brought before the criminal courts of Brooklyn during the past 15 years, but in all that time and from all those boys only two were Scouts at the time they got into trouble and only seven had ever been Scouts. Only one Boy Scout was brought before the Juvenile Courts of Chicago during 1926. No Scout has ever been hailed into the courts of Tampa, Florida, Cedar Rapids, Iowa, Columbus, Ohio, or Topeka, Kansas. Never, during the last ten years, has a Scout been brought into the New York City Children's Court, which court deals with all children under 16 years of age. Countless other cases could be cited if space were available.

A Boy Scout is a good citizen. 999 times out of every 1,000 he grows into a better citizen. One of the reasons for this can be found in the oath every boy must take at the time he becomes a Scout. That oath is: "On my honor I will do my best—(1) To do my duty to God and my country, and to obey the Scout laws; (2) To help other people at all times; (3) To keep myself physically strong, mentally awake, and morally straight." A second reason will be found in the twelve points of the Scout law, which points are: "A Scout is trustworthy, loyal, helpful, friendly, courteous, kind, obedient, cheerful, thrifty, brave, clean, and reverent." The motto of the Scouts is: "Be Prepared," and their principle is: "Do a good turn daily." It is a creed as manly as it is high minded.

Since 1910 more than 3,200,000 boys have been Scouts. There are 600,000 Boy Scouts in America today. That augurs well for this country. But all you men who read this editorial—reread this following statement several times: One million additional boys could be enrolled immediately if adequate leadership could be provided. Put that in your think tank and don't let it leak.

Too many people think of the Boy Scouts as an organization arranged only for play and recreation, and designed only to utilize the spare time of the boy. Such a conception is not only incomplete, it is almost wholly misleading. The Boy Scouts of America is a means to an end—that end being better bodies, higher characters, and training for citizenship.

Send your son and heir to the Boy Scout's camp this summer—for sun and air.

A Never-failing Recipe

TAKE one reckless, natural-born fool, two or three big drinks of bad liquor, and a high-powered, fast motor car. Soak fool in liquor, place in car and let go. After due time, remove from wreckage, place in black, satin-lined box, and garnish with flowers.

February Record and Entrants in the Paper Industry Safety Contest

PERFECT SCORES

	PARTICIPANT	NAME OF MILL	LOCATION
Group A	Laurentide Company, Ltd.	Grand Mere	Grand Mere, Que., Canada
	Kimberly-Clark Co.	Falls	Neenah, Wis.
Group B	International Paper Co.	Niagara Falls	Niagara Falls, N.Y.
	Marinette & Menominee Paper Co.	Marinette	Marinette, Wis.
	Kimberly-Clark Co.	Spruce Falls	Neenah, Wis.
	American Writing Paper Co.	Power & Repair	Holyoke, Mass.
	American Writing Paper Co.	Beebe & Holbrook	Holyoke, Mass.
	Louis Dejonge & Co.	Stapleton	Stapleton,S.I.,N.Y.
	International Paper Co.	Fort Edward, No. 2	Fort Edward, N.Y.
	Strathmore Paper Co.	Woronoco, No. 2	Woronoco, Mass.
Group C	Itasca Paper Co.	Minnesota	Grand Rapids, Minn.
	Marinette & Menominee Paper Co.	Menominee	Marinette, Wis.
	American Writing Paper Co.	Holyoke	Holyoke, Mass.
	Provincial Paper Mills, Ltd.	Montrose Division	Thorold, Ont., Can.
	Bird & Son, Inc.	Phillipsdale	East Walpole,Mass.
	American Writing Paper Co.	Parsons	Holyoke, Mass.
	The Gardner & Harvey Co.	Number 3	Middletown, Ohio
	The Adams Bag Co.	Chagrin Falls	Chagrin Falls, Ohio
	American Writing Paper Co.	Monotuck	Holyoke, Mass.
	Strathmore Paper Co.	Number 1	Woronoco, Mass.
	Union Bag & Paper Corp.	Fenmore Paper	New York, N. Y.
	Lincoln Pulp & Paper Co., Ltd.	Lybster	Merritton, Ont., Canada
	Union Bag & Paper Corp.	Fenmore Sulphite	New York, N. Y.
	Kimberly-Clark Co.	Atlas	Neenah, Wis.
	The Upson Co.	Board Mill	Lockport, N. Y.
	U. S. Gypsum Co.	Oakfield	Oakfield, N. Y.
	Kimberly-Clark Co.	Badger-Globe	Neenah, Wis.
	Union Bag & Paper Corp.	Number 5	New York, N. Y.
	Kimberly-Clark Co.	Neenah	Neenah, Wis.
	American Writing Paper Co.	Mt. Tom	Holyoke, Mass.
	Lincoln Pulp & Paper Co., Ltd.	Lincoln	Merritton, Ont., Canada
	American Writing Paper Co.	Wauregan	Holyoke, Mass.
	International Paper Co.	Riley	Chisholm, Me.
	U. S. Gypsum Co.	Gypsum	Ohio
	U. S. Gypsum Co.	Lancaster	Ohio
	International Paper Co.	Fall Mountain	Bellows Falls, Vt.
	Sorg-Oglesby-Smith Paper Co.	Smith	Middletown, Ohio
	Robertson Paper Co.	Montville	Montville, Conn.

IMPERFECT SCORES

GROUP A			GROUP B			GROUP C		
Key	Rank	Rate	Key	Rank	Rate	Key	Rank	Rate
A- 9	3	.03	B-25	9	.01	C-11	29	.06
A- 7	4	.03	B-13	10	.02	C-53	30	.10
A-19	5	.08	B-31	11	.03	C-35	31	.11
A-22	8	.08	B- 4	12	.07	C-19	32	.11
A-21	7	.15	B-11	13	.08	C- 9	33	.13
A-25	8	.17	B-34	14	.08	C- 6	34	.16
A-12	9	.18	B-35	15	.18	C-25	35	.18
A-10	10	.18	B-33	16	.22	C-33	36	.21
A- 1	11	.22	B- 1	17	.22	C-20	37	.21
A-26	12	.24	B-12	18	.23	C-42	38	.27
A- 5	13	.27	B- 8	19	.25	C-51	39	.29
A-20	14	.27	B-21	20	.28	C-52	40	.31
A-17	15	.36	B-24	21	.42	C-14	41	.41
A- 6	16	.38	B-17	22	.45	C-34	42	.43
A-23	17	.41	B-23	23	.49	C- 3	43	.50
A-24	18	.42	B-18	24	.50	C-32	44	.51
A- 8	19	.45	B-16	25	.52	C- 2	45	.53
A-14	20	.46	B-19	26	.54	C-17	46	.62
A- 2	21	1.52	B- 9	27	.64	C-49	47	.73
A-16	22	2.58	B-36	28	.73	C-29	48	.75
A-11	23	4.95	B-20	29	.92	C-41	49	.81
A-13	24	5.31	B-26	30	1.05	C-48	50	.93
A-3	25	11.31	B- 7	31	1.30	C-24	51	.94
			B-14	32	1.39	C- 4	52	2.13
			B-30	33	1.86	C-30	53	2.33
			B- 2	34	3.15	C-57	54	2.45
			B-29	35	7.95	C-15	55	2.78
						C-45	56	32.50

COMPLETE REGISTRATION

	ENTRANT	NAME OF MILL	LOCATION
Group A	Bogalusa Paper Co.	Bogalusa	Louisiana
	Champion Coated Paper	Coating	Hamilton, Ohio
	Champion Coated Paper	Paper, No. 2	Hamilton, Ohio
	Champion Fibre Co.	Canton	North Carolina
	Continental Paper & Bag Mills	Rumford	Maine
	Dill-Collins Co.	Philadelphia	Pennsylvania
	Hammermill Paper Co.	Erie	Pennsylvania
	International Paper Co.	Otis	Chisholm, Me.
	International Paper Co.	Hudson River	Palmer, N. Y.
	Kimberly-Clark Co.	Kimberly	Kimberly, Wis.
	Kimberly-Clark Co.	Niagara	Neenah, Wis.
	Kimberly-Clark Co.	Falls	Neenah, Wis.
	Laurentide Co.	Grand 'Mere	Quebec, Canada
	Marathon Paper Co.	Rothschild	Wisconsin
	Mead Pulp & Paper Co.	Chillicothe	Ohio
	Nekoosa-Edwards Paper Co.	Combined Mills	Port Edwards, Wis.
	Northern Paper Mills	Green Bay	Wisconsin
	Northwest Paper Co.	Cloquet	Minnesota
	Pacific Mills, Ltd.	Ocean Falls	British Columbia, Canada

COMPLETE REGISTRATION (Continued)

	ENTRANT	NAME OF MILL	LOCATION
Group A	Parker-Young Co.	Lincoln Plant	Lincoln, N. H.
	St. Croix Paper Co.	Woodland	Maine
	St. Maurice Valley Co.	Belgo Division	Shawinigan, Que., Canada
	West Virginia Pulp & Paper Co.	Luke	Maryland
	West Virginia Pulp & Paper Co.	Mechanicsville	New York
	West Virginia Pulp & Paper Co.	Tyrone	Pennsylvania
Group B	American Writing Paper Co.	Beebe & Holbrook	Holyoke, Mass.
	American Writing Paper Co.	Crocker	Holyoke, Mass.
	American Writing Paper Co.	Power & Repair	Holyoke, Mass.
	Bird & Son, Inc.	East Walpole	Massachusetts
	Champion Coated Paper Co.	Paper, No. 1	Hamilton, Ohio
	Cornell Wood Products	Cornell	Wisconsin
	De Grasse Paper Co.	Pyrites	New York
	Dejonge & Co., Louis	Stapleton	Staten Island, N.Y.
	Escanaba Paper Co.	Escanaba	Michigan
	Falls Manufacturing Co.	Oconto Falls	Wisconsin
	Finch, Pruyn Co., Inc.	Glens Falls	New York
	Fort Howard Paper Co.	Green Bay	Wisconsin
	Great Western Paper Co.	Ladysmith	Wisconsin
	Hollingsworth & Vose Co.	East Walpole	Boston, Mass.
	Hollingsworth & Vose Co.	West Groton	Boston, Mass.
	International Paper Co.	Fort Edward, No. 2	Fort Edward, N.Y.
	International Paper Co.	Glen, Number 5	Berlin, N. H.
	International Paper Co.	Niagara Falls	New York
	International Paper Co.	Wilder	Vermont
	Kimberly-Clark Co.	Kotex	Neenah, Wis.
	Kimberly-Clark Co.	Spruce Falls	Kapuskasing, Ont., Canada
	Louisiana Pulp & Paper Co.	Bastrop	Louisiana
	Marinette & Menominee Paper Co.	Marinette	Wisconsin
	Mead Fibre Co.	Kingsport	Tennessee
	Michigan Paper Co.	Plainwell	Michigan
	Munising Paper Co.	Munising	Michigan
	Port Huron Sulphite & Paper Co.	Port Huron	Michigan
	Racquette River Co.	Potsdam	New York
	Rhinelander Paper Co.	Rhinelander	Wisconsin
	Scott Paper Co.	Chester	Pennsylvania
	Strathmore Paper Co.	Woronoco, No. 2	Woronoco, Mass.
	Strathmore Paper Co.	Mittineague, No. 1	Woronoco, Mass.
	Thilmany Pulp & Paper Co.	Kaukauna Paper	Kaukauna, Wis.
	Thilmany Pulp & Paper Co.	Kaukauna Sulphate	Kaukauna, Wis.
	Wausau Sulphate Fibre Co.	Mosinee	Wisconsin
Group C	Adams Bag Co.	Chagrin Falls	Ohio
	American Writing Paper Co.	Albion	Holyoke, Mass.
	American Writing Paper Co.	Dickinson	Holyoke, Mass.
	American Writing Paper Co.	Gill	Holyoke, Mass.
	American Writing Paper Co.	Holyoke	Holyoke, Mass.
	American Writing Paper Co.	Linden	Holyoke, Mass.
	American Writing Paper Co.	Mt. Tom	Holyoke, Mass.
	American Writing Paper Co.	Nonotuck	Holyoke, Mass.
	American Writing Paper Co.	Norman	Holyoke, Mass.
	American Writing Paper Co.	Parsons	Holyoke, Mass.
	American Writing Paper Co.	Riverside	Holyoke, Mass.
	American Writing Paper Co.	Wauregan	Holyoke, Mass.
	Bemis Bros. Bag Co.	Peoria	Illinois
	Bergstrom Paper Co.	Neenah	Neenah, Wis.
	Bird & Son, Inc.	Phillipsdale	East Walpole, Mass.
	Defiance Paper Co.	Number 1	Niagara Falls, N.Y.
	Defiance Paper Co.	Number 3	Niagara Falls, N.Y.
	Franklin Board & Paper Co.	Franklin	Franklin, Ohio
	Gardner-Harvey Co.	Number 1	Middletown, Ohio
	Gardner-Harvey Co.	Number 2	Middletown, Ohio
	Gardner-Harvey Co.	Number 3	Middletown, Ohio
	International Paper Co.	Fall Mountain	Bellows Falls, Vt.
	International Paper Co.	Glens Falls, No. 1	Glens Falls, N. Y.
	International Paper Co.	Livermore	Chisholm, Maine
	International Paper Co.	Montague	Turner Falls, Mass.
	International Paper Co.	Riley	Chisholm, Maine
	International Paper Co.	Webster, No. 9	Woronoco, Mass.
	International Paper Co.	Winnipiseogee	Franklin, N. H.
	Itasca Paper Co.	Minnesota	Grand Rapids, Minn.
	Kimberly-Clark Co.	Atlas	Neenah, Wis.
	Kimberly-Clark Co.	Badger-Globe	Neenah, Wis.
	Kimberly-Clark Co.	Neenah	Neenah, Wis.
	Lincoln Pulp & Paper Co.	Lincoln	Merritton, Ont., Canada
	Lincoln Pulp & Paper Co.	Lybster	Merritton, Ont. Canada
	Lincoln Pulp & Paper Co.	Sulphite	Merritton, Ont., Canada
	Marinette & Menominee	Menominee	Marinette, Wis.
	Mead Pulp & Paper Co.	Peerless	Dayton, Ohio
	Northwest Paper Co.	Brainerd	Cloquet, Minn.
	Provincial Paper Mills, Ltd.	Montrose Division	Thorold, Ont., Can.
	Robertson Paper Co.	Montville	Connecticut
	Sorg Oglesby Smith Paper Co.	Sorg	Middletown, Ohio
	Sorg Oglesby Smith Paper Co.	Oglesby	Middletown, Ohio
	Sorg Oglesby Smith Paper Co.	Smith	Middletown, Ohio
	Strathmore Paper Co.	Woronoco, No. 1	Woronoco, Mass.
	Strathmore Paper Co.	Mittineague, No. 2	Woronoco, Mass.
	Thilmany Paper & Pulp Co.	Appleton	Wisconsin
	Union Bag & Paper Co.	Allen	New York City
	Union Bag & Paper Co.	Cheboygan Paper	New York City
	Union Bag & Paper Co.	Cheboygan Sulphite	New York City
	Union Bag & Paper Co.	Fenmore Paper	New York City
	Union Bag & Paper Co.	Fenmore Sulphite	New York City
	Union Bag & Paper Co.	Number 5	New York City
	Upson Co.	Board Mill	Lockport, N. Y.
	U. S. Gypsum Co.	Gypsum	Gypsum, Ohio
	U. S. Gypsum Co.	Lancaster	Lancaster, Ohio
	U. S. Gypsum Co.	Oakfield	Oakfield, N. Y.

Michigan State Safety Conference

Paper and Pulp Section Enjoys Excellent Program

IN RESPONSE to the effort made by the Paper and Pulp Section of the National Safety Council to enthuse its Michigan members to attend the Michigan State Safety Conference, held in Grand Rapids, March 21 and 22, 1927, fifteen paper and pulp mill representatives attended the meeting of the Section, which was held in the Hotel Pantlind, Tuesday morning, March 22nd, under the direction of Chairman W. J. Peacock.

The program of the general conference occupied two days, beginning Monday morning with a General Safety Meeting in the forenoon under the direction of Chairman Lee H. Bierce, secretary of the Grand Rapids Association of Commerce. The afternoon on Monday was devoted to a General Industrial Safety Meeting under Chairman Percy Angove, of the Michigan State Department of Civilian Rehabilitation. Each of the speakers in the industrial meeting placed the responsibility for accidents on the shoulders of the plant personnel from general managers and superintendents down through the rank and file of plant operatives, with greatest emphasis on the foremen who have the immediate control of workmen. Speaking particularly of the latter, G. A. Kuechenmeister, of the Dominion Forge & Stamping Co., Walkerville, Ontario, stated, "We have seen the foreman advanced through a cycle. First, he was required only to give production, then production within costs and limits, and finally production within costs and limits without injury to the men. High speed machines and mass production have brought more accidents, but no one wants to go back to hand work. Our problem today then is to make mass production free of accidents. We must convert employees to Safety and make foremen as responsibile for injured, 'scrapped' human beings as for scrapped materials."

More than five hundred people attended the banquet held on Monday evening at the Hotel Pantlind. Music and inspirational talks filled the program under the direction of Toastmaster E. H. Landwehr, Holland Furnace Co., Holland, Michigan. Dr. Emanuel Sternheim, of New York City, in speaking on "Babbitt—a Challenge to Men," commended the movement of Safety men, saying they were leading the way not only to safe bodies but also to safe minds and morals. "We need," he said, "a little less of blatant patriotism and a little more of the consecrated, devoted, earnest kind that does not shriek from the housetops, but works quietly and effectively for communal good and restoration of lost or misplaced ideals of the American home."

PAPER AND PULP SECTION MEETING

The meeting of the Paper and Pulp Section on Tuesday morning was attended by fifteen representatives of pulp and paper mills, twelve of whom were from six different companies in the State of Michigan.

Chairman Peacock after calling the meeting to order, related some of the outstanding accomplishments of the Section during its fifteen years of progress, chief of which might be named the Safety Code for Pulp and Paper Mills, formulated in co-operation with the National Safety Council and which has now become a standard instrument, the recognized safety code for pulp and paper mills.

The annual contest among mill members of the National Safety Council which began in 1925 and for which THE PAPER INDUSTRY has been awarding each year a silver loving cup to the mill having the lowest accident record, was described by Mr. Peacock and figures given to show the increasing popularity of this stimulant for accident prevention and the great good which has been placed to its credit. "Anything," he said, "that goes toward saving lives is worthwhile." In 1926, there were fewer deaths as the result of accidents in the paper industry than in any year in the history of the Section. The success of the Paper and Pulp Safety Contest has been such as to prompt the executive committee of the National Safety Council to appoint a special committee to study this plan with the idea of sponsoring such contests in other sections of the Council. As further evidence of their respect for its value, the Council will supply the three divisional cups to be awarded this year, the major cup to be supplied as heretofore by THE PAPER INDUSTRY.

Value of Personal Contact

The first speaker on the program was C. K. Boyer, mill manager of the Interlake Pulp and Paper Co., Appleton, Wis., whose subject was "Safety in the Wood Room." There being no wood room representative present, Mr. Boyer digressed a little from the subject of his paper. This original article will appear in the next issue.

Personal contact between the management and employees was given as the means of inspiring safety in the minds of workmen, thereby helping them to avoid accidents. Stormy tactics applied to disorderly conditions seldom get the good results obtained through quiet, orderly correction.

Because the nature of some of the work around the mill is dirty, is no reason why the department itself can not be kept clean and the mental status of the workmen kept correspondingly so. Mr. Boyer emphasized his statement that old mills can be kept clean and orderly, and safety troubles corrected through the installation of machine guards—that men will not work under poor conditions with the same interest as when conditions are good.

In the construction of new mills, Mr. Boyer pointed to the fact that frequently there is more money spent in the design of buildings than in providing adequate facilities for machinery. Designs should be carefully watched to prevent hazardous conditions in which to place men in the repair of machinery. Workmen must be kept in good humor and not aggravated by the lack of proper facilities for making repairs.

Safety affects the quantity and quality of the product, and red figures in production costs being undesirable, safety becomes an integral, inseparable part of the production system. The same make of machine manufactures paper for more than one company but the difference in the quantity and quality of their product is largely the result of the personal element in each case.

Since all of the imperfect men can not be culled out of those available for employment, Mr. Boyer submitted the theory that industry must take care of them in one way or another. Derelicts and young men paroled from state reformatories must either be a burden to society or be given an opportunity to make something of themselves. He recommended that it is good business to try to make such people self supporting, and the correcting influence is best applied through the means of personal contact.

Mr. Boyer recommended that all machine guards should be painted silver gray instead of green, as they now most generally are; walls and woodwork should be in flat white, such colors being light reflecting and superior to shades which absorb light. It is no longer necessary, he said, to paint objects in colors to remind one of their identity, since safety is no longer in the primary stages and should be treated as all other production factors.

Methods of Reducing Accident Frequency

William E. Walker, employment secretary of the Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich., agreed in complimentary terms with the ideas concerning personal contact brought out so clearly in Mr. Boyer's address. Mr. Walker stated that the head of his concern is fundamentally interested in employee education, and the need for and the possibility of doing still greater work along safety lines, principally preventive, was more forcibly called to attention when the last unit was added to their plant. New building, new equipment, strange men working together without being particularly interested in one another, marked the necessity for greater attention being given to the education of the individual with regard to his duty toward the fellows he was working with.

After equipping every machine with guards recommended

by experts, their next and hopeful step was to adopt a vigorous bulletin campaign intending to impress on those, who in spite of safeguards managed to get hurt, things that could possibly happen to them and of things that had already happened in similar plants. A reorganized safety committee made more frequent trips of inspection and reported their findings at the regular foremen meetings, and each issue of the monthly house organ was full of "don'ts" and the terrible possibilities that might follow "if you did." Three months of this campaign was ample time to convince the management that something had happened to their well laid scheme—folks continued to get hurt in spite of the fact that they were told not to. The question was what to do.

The realization developed that in their zeal they were teaching their employees to be so very careful that they were making them nervous, more excitable, more apt to suffer accidents, and their production was decreasing. They had found the way to increase accident frequency, and in this unfortunate way seemed to discover a solution.

Their present method of reducing accident frequency has thus far proved very encouraging. All organized safety work has its headquarters in the personnel department. Responsibility for accidents are placed with the executive in charge of the department in which the accident occurs.

Cost of Carelessness.—Each executive is advised at the end of each month when costs are computed, just what carelessness has cost his department, and the information is given—

1st—In terms of just what the accident has cost the workman. The executive can then go over the situation with the injured workman to prevent a repetition on his part, or in that department, or in the entire plant after the case is taken up and discussed at the foremen's meeting. Going over the case with the injured also brings the executive and the workman together on a ground that shows the company's attitude toward its workmen and frequently gives an opening for the executive to talk to the man on habits of life that are conducive to accidents.

2nd—It gives the executive in charge information in terms of loss of production. This amount differs, of course, in different lines of manufacture and in various departments of each plant.

3rd—Information is given the executive on the costs of medical, hospital and compensation costs for the care of injured in his department. These figures are surprising over a period of twelve months, and what individual supervision to avert accidents has saved the K. V. P. can be realized in the following figures:

In 1924, with an average of 701 employees, costs were as follows:

Compensation	$3,718.15
Medical attention	2,693.50
Hospital	554.46
Total	$6,966.11

For every man in the plant, it cost the company $9.94.

The average number of days lost by each employee in the plant was 29 days.

In 1925, the combined compensation, medical and hospital costs were $5,451.65.

A reduction of $1,514.46 was made under the previous year.

The average cost per employee was reduced $2.12 per head to $7.82.

Days lost to workmen was reduced 12 days per head to 17 days each.

In 1926, with exactly 46 more employees, the combined compensation, medical and hospital costs were reduced $1,893.62 under the year 1924, with a decreased loss to each employee of 16½ days per year.

To further aid the good work, K. V. P. has added to their staff the services of a full time nurse. Previous to this, any case that required more than semi-skilled attention, or where infection was probable, was sent to the company doctor and the expense was charged against the injured man's department. This had the effect of making the executive the judge and drew his attention more closely to the cause for and the need of more consideration in the matter of accident prevention.

For the month of February, 1927, the company had but five cases that required the attention of a doctor. No time was lost and the entire medical expense was $9.50. "We believe, therefore," said Mr. Walker, "that the solution to the safety problem lies in the education of the individual along the lines of his responsibility toward the other fellow."

Discussion.—A general discussion followed Mr. Walker's talk. In reply to a question of how Safety costs are kept in the K. V. P. company, the answer was that all doctor bills and insurance company settlements go through the hands of the safety department. It was also brought out that physical examinations are required of all applicants for employment and that men are placed where they are supposed to be best fitted. In one case, where Bright's disease was discovered in a boy applicant, he was advised to get weekly treatment and in the meantime he was placed at work. Mr. Boyer said that in his company, all minor injuries must be reported to first aid men—that the greatest compensation loss has come from minor injuries. Employees are warned that the company will not be responsible unless the injury is reported promptly, which would make it necessary to apply to the Industrial Commission for compensation ruling. This is not an effort to evade responsibility but is done to bring pressure on the necessity of making reports of all injuries.

Individual Responsibility in Accident Prevention

The concluding number on the program was a scholarly exhibition of those factors which constitute individual responsibility for accident prevention, presented by Ernest Augustus, safety director of the Mead Pulp and Paper Company, Chillicothe, Ohio. It is impossible to reproduce this paper in full, but the major points are as follows:

"It is usually, if not always the custom, in starting the erection of any permanent and substantial structure, to begin at the bottom and build upward until the job is finally completed to our liking. In other words, we usually think of a building as requiring a firm foundation before work can be started upon the main body of the structure.

"Paradoxical as it may seem, the opposite method must be used in building up a permanent, substantial and effective safety organization—or rather, the foundation is at the top. To accomplish the most satisfactory and lasting results, we must start our structure at the top and build downward. Interest in accident prevention work must begin at the top.

Safety and Morals.—"Safety or accident prevention, whichever we choose to term it, simmers down to nothing more or less than a state of mind, a spirit or an attitude on the part of the members of any organized body of men and women. Once that state of mind has been properly directed along careful, thoughful, mutually helpful channels, the problem of accident prevention ceases to be a problem, and we find a happy and contented organization where needless accidents are reduced to the minimum.

"It may sound rather strange and out-of-place to speak and think of safety and accident prevention as having to do with the question of morals and moral responsibility; but after all, it is just that, and more.

"In the first place, every normal, intelligent human being born into this world, after he or she has reached the age of reason, owes a certain moral responsibility to his or her fellow-beings, to look after their welfare, safety and happiness.

"Was it not Cain, when asked by the Lord, 'Where is thy brother, Abel?' who replied, 'Am I my brother's keeper?' The answer to the question always has been and always will be, 'Yes, you are your brother's keeper.'

"I might dwell at length upon this one thought—Safety from a Moral Viewpoint—but it shall suffice at this time for me to borrow the words of another and call attention to the six fundamental responsibilities of every man—first, his duty to himself; second, his duty to his family; third, his duty to his fellow-employees; fourth, his duty to the company that employs him; fifth, his duty to the community of which he is a part; and sixth, his duty to the God that gave him life.

Management Must Back Safety.—"Something more than a mere passive interest in accident prevention work must be

displayed by the management before it can ever be hoped to attain the best results with safety departments, safety committees, department heads and foremen, and even the workers themselves. The management must show that it is actively interested and determined to eliminate accidents on the properties which it controls and directs.

"It is not enough merely to authorize the expenditures of money for safety committees, safety rallies, bulletin boards, bulletin-board services, etc. There is the human equation to be considered and everyone who has had anything to do with the direction of men readily understands that there is nothing which will arouse interest and stimulate enthusiasm as much as the knowledge that the 'big boss' has a direct knowledge of, and interest in, the safety and accident record of his company.

"It may appear that I have digressed somewhat from my subject and that I have placed undue emphasis on the individual responsibility of the chief executive, leaving out or making very little mention of the many other factors and individuals entering into any discussion of this kind; but I believe that what I have said is related intimately to my subject; for what I have said of the responsibility of the president and the general manager, applies equally as well to the plant superintendent, the department heads, foremen and all others in the organization.

The Safety Director.—"The safety director bears a large portion of the burden of responsibility for accident prevention. It is his duty to properly keep before the workers the policies of the management toward safety. It is his duty to see that machinery and equipment is kept properly safeguarded and protected. He is responsible for the organization and the proper functioning of all safety committees. He is responsible, or at least should be, for the checking over of all plans prepared by the engineering department pertaining to the erection of new buildings and the installation of new machinery and equipment, making sure that everything meets the standard safety requirements. He is responsible for the education of the individual workers in the plant in matters pertaining to safety and safe practices, instilling into them the proper 'safety-conscience' and the desire to be safe. He is responsible for the investigation of all accidents and unsafe conditions and practices, and for the making of recommendations looking toward their correction and elimination.

"The chief engineer and his staff of assistants should be held responsible for seeing to it that all plans calling for new construction, new installation or the remodeling and revision of old construction and old installations, embody in them the latest approved safeguards.

"The employment manager and others in his department coming in contact with employees and prospective employees can also accomplish wonders in helping to put over an effective accident prevention program. It should be the duty of the employment manager or someone in his department, well qualified to do the work, to thoroughly explain to all new employees the policy of the management with respect to safety and accident prevention.

"The plant physician, the nurse or other attendants on duty in the plant hospital likewise must bear a portion of the burden for properly educating the workers along accident prevention lines, creating the proper first-impressions. Employees should be encouraged to seek first-aid for all minor injuries.

Foremen's Responsibility.—"Much is heard and read about the responsibility of the foreman for accidents and accident prevention. It is true that the foreman is largely responsible for the safety of those in his department, but here again the foreman usually reflects the attitude of the management. The foreman is the man who makes direct contact with the workers, and it is to him that they look mainly for their guidance and instructions. The foreman is responsible for the instruction of his men in safe practices and for the keeping up of their interest in the accident prevention program. By setting a good example and by demonstrating his own interest, a good foreman should have little difficulty on this score. The foreman is also responsible for introducing the new man to his work, for introducing him to his fellow-employees, and for making him feel at home and free to ask questions at any time, especially during his first few days after being placed in the department.

Responsibility of Workers.—"Last but not least in this category of those individuals responsible in accident prevention in industry today, are the workers themselves. Little can be said concerning this last and by far the largest classification, other than that of the other spokes in the wheel, from the president on down to the foremen, are bearing their full share of the burden, it cannot help but follow that the individual workers will have contracted such a high regard for and interest in the accident prevention program that they will automatically look out for themselves and bear up in admirable fashion their portion of the load. Safety and accident prevention are highly contagious, and once an epidemic has started, it is almost impossible to stop it.

"Safety and accident prevention, in the final analysis, resolves itself into a state of mind, an attitude or a desire to work safely on the part of the individual. The management is the dynamo that generates and serves to stimulate interest, passing it on down the line to the plant superintendent, the various department heads, the foremen and to the workers themselves, each serving as a separate driving unit or motor to put across a successful safety program."

Regional Director Being Sought

After a brief discussion which followed the foregoing address, an effort was made by Chairman Peacock to learn of some safety director in a Michigan paper mill which is a member of the Pulp and Paper Section of the National Safety Council, who would accept the office of vice president and regional director of the Michigan Section. It is hoped that an official announcement can soon be made.

Those Who Attended the Meeting

Central Paper Co., Muskegon, Mich.—M. E. Petersen, Thomas Tronson and Henry P. Weick; **Interlake Division, Consolidated Water Power Paper Co.**, Appleton, Wis.—C. K. Boyer; **Kalamazoo Paper Co.**, Kalamazoo, Mich.—Mrs. M. Young; **Kalamazoo Vegetable Parchment Co.**, Kalamazoo, Mich.—Wm. E. Walker; **Kellogg Company**, Battle Creek, Mich.—Robert J. Fleming and Wm. P. Penty; **Mead Pulp & Paper Co.**, Chillicothe, Ohio—Ernest Augustus; **Michigan Paper Co.**, Plainwell, Mich.—Walter Borden, R. E. Conklin, C. Newman and A. Standish; **Northern Paper Mills**, Green Bay, Wis.—Wm. J. Peacock; **THE PAPER INDUSTRY**, Chicago—A. Scott Dowd; **Standard Paper Co.**, Kalamazoo, Mich.—A. E. Woollam.

Sixth Annual Simond's Contest

Announcement has been made of the Alvan T. Simond Economic Contest for 1927, which offers $1,500 in prizes, first of which is $1,000, and the second of $500 for the best essay on the subject, "Who Ultimately Pays the Taxes"?

The essays should be written in popular style, to interest "the man on the street," the average person as well as the technical. Essays must be written in English, and preferably on one side of the paper only. An assumed name should be at the head of each sheet, and the real name and address should accompany each essay submitted, in a sealed envelope with the assumed name on the outside.

All communications should be addressed to the Contest Editor, Simonds Saw and Steel Co., 470 Main St., Fitchburg, Mass., and must reach him on or before Dec. 31, 1927.

Frank Jarosch has just taken charge of the engineering department of the S. B. R. Specialty Co., manufacturers of ball bearings, whose general offices and works are at East Orange, N. J. He comes with a wealth of experience with the D. W. F. Co., of Berlin, Germany. The F. & S. Bearing Factories of Europe, the Gurnev Ball Bearing Co., of Jamestown, N. Y., and the Jarosch Bearings Corp., organized in 1922 for the purpose of importing and marketing F. & S. ball and roller bearings. During the last war he served on several engineering committees for the U. S. Government in advisory capacity on bearing specifications. He should prove a valuable adjunct to the S. B. R. Specialty Co., who are attaining a rapid and healthy growth in the ball bearing field.

Speed Reducers and Their Application

Types for Pulp and Paper Mill Requirements

A SPEED reducer may be defined as an assembly of gears within an enclosed housing, the purpose of which is to secure a desired reduction of speed between a driving and a driven shaft efficiently, within a minimum space. The purpose of the enclosed housing is to furnish proper bearing support for shafts, to retain the lubricant for moving parts, and to protect them from the disintegrating action caused by

Fig. 1—Non-planetary type spur gear reduction unit

abrasive materials, water, or steam, and also to protect operators from danger of moving parts.

The great variation of requirements on speed reduction units has resulted in the design of a number of different types. It is true that in many cases a speed reducer of one design can be substituted for a reducer of some other design without alterations or modifications, but in many cases, some one type more nearly fulfills the specific requirements than another type.

Successful speed reducers of different types are produced by a number of different manufacturers, and it can be said

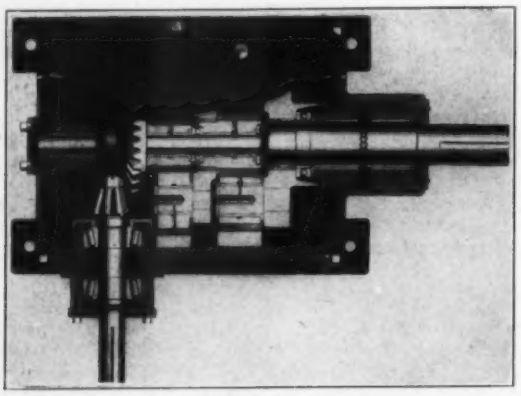


Fig. 2—Planetary angle drive spur gear speed reducer, using general oiling bearings

that the matter of theoretical design, while an important factor, will not alone insure a machine successful in practical operation. Theoretical design must be supplemented by careful investigation and analysis of each minute detail of the construction and the proper proportioning of the various parts not only for strength but for ultimate wear under the severe operation conditions the unit may be called upon to meet.

Workmanship must be of a high standard, and the proper kind and grade of materials selected and used. These are of vital importance, and the degree of success attained by any type of reduction unit in practical operation will soon indicate whether or not the points outlined above have been given proper consideration.

In this article we will endeavor in a general way, to touch on the different types of speed reducers most suitable and economical for various kinds of paper mill drives. We will start by grouping the common types into three classes, basing the classification on the type of gears used, rather than on the general construction of the different units. These three general types are: first, the spur gear speed reducer; second, the herringbone gear reducer, and third, the worm gear speed reducer. The discussion in this article will follow the order in which the designs have been developed and adapted for their particular use in industrial service.

Spur Gear Speed Reducers

These units are called spur gear reducers from the fact that combinations of spur gears are used to produce the de-

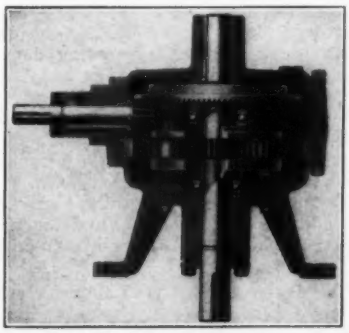


Fig. 3—Planetary vertical drive spur gear speed reducer. Note bearings and method of supporting bevel gear

sired speed reduction. This type is made to drive in a straight line—the high and slow speed shafts being concentric, to drive at an angle either to the right or left or both, and to drive up or down. They are fully enclosed and self-lubricating.

Much has been said and written to bring out points in favor of the different gear combinations, such as the non-planetary, planetary, and the multiple back gear type, and as these arguments have been published during recent years, we take it for granted that the reader has a general idea of the different construction principles, so it will be of little interest to review these different points in this article.

Figure 1 illustrates the general construction of a well-type of spur gear reduction unit. The pinion instead of meshing directly with a slow speed gear, transmits its power through a number of idler gears to a large rotating internal gear. This arrangement is repeated for each individual reduction step. This construction has the advantage of producing a small and compact unit with comparatively small gears, and as the pinion is located concentric with the slow speed gears, the bearing pressures on the high and slow speed shafts are to a certain degree balanced. This does not mean that there are no bearing loads in a spur gear reduction unit of this type. However, as the bearing load is distributed among the idler gears, and as these are well oiled and protected, frictional losses and maintenance costs are comparatively low.

When hardened and heat-treated gears are used in spur gear reducers of this type, the power transmitting capacity

is generally about the same as that of an electric motor of the same rating to which it may be connected, although the torque ratio of the high and low speed shafts, will run very high in most cases. This is a great advantage when space is valuable, and a combination of an electric motor with a reducer of this kind makes a neat and efficient installation wherever shafts are to be directly connected in line by flexible couplings. The construction is somewhat at a disadvantage in the case of an overhung load on the extended shafts. This tends to produce excessive leverage, considerable heating and rapid wear. This disadvantage, however, is readily overcome by the use of an outboard bearing where side-pulls are encountered, as in the case where a pulley, gear or sprocket is mounted on the extended shaft.

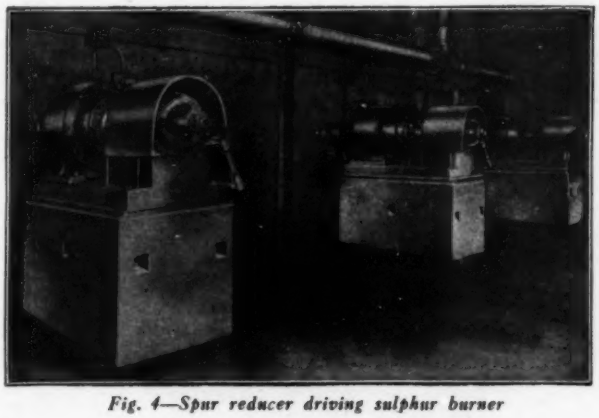


Fig. 4—Spur reducer driving sulphur burner

Fig. 5—Planetary spur gear drive speed reducer, used on a conveyor in a large eastern paper mill

Figure 2 shows a planetary angle spur gear drive unit. This type is made with the drive shaft on either the right or left hand side of the driven shaft, and where conditions require, may be had with shafts on both right and left hand sides, running at the same, or different speeds. The angle type unit finds an ideal application in shops and mills where a single line shaft drives light, relatively high speed equipment on one side of the room, and heavy slow speed, on the other.

Figure 3 illustrates a planetary spur gear vertical drive speed reducer. These units may be had with the drive shafts on either top or bottom, or both, and are commonly used on agitators, mixers and disk feeders.

Their use allows for setting the motor at a distance from the drive itself, to protect the motor windings and armature from the harmful action of fumes, steam or acid gas, rising from tanks or chests. The small head room required is, of course, an advantage where space is at a premium.

The speed at which spur gear reducers are operated should not exceed speeds recommended by the manufacturers, as the types of gears, and the combination of the gears used does not lend itself to speeds above ordinary electric motor speeds. For sizes of 25 h. p. or more, moderate speed motors are preferable. High speeds may produce excessive heating, and in many instances undesirable noise and vibration.

Figures 4, 5, 6, 7 and 8 show typical installations of this type of unit in pulp and paper mills.

Herringbone Gear Speed Reducers

Herringbone gears were primarily developed in order to obtain a smooth and continuous tooth contact, and to give a silent, vibrationless transfer of power from one gear to another with an absolute elimination of back lash. This holds true in a measure for single helical gears, the object

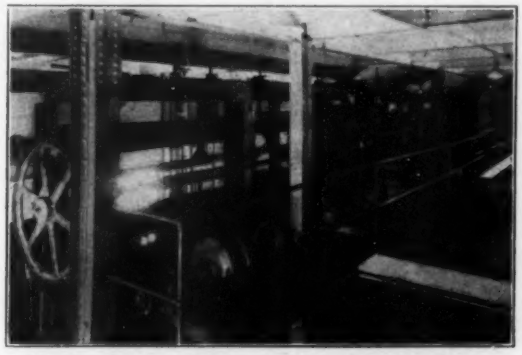


Fig. 6—A group of continuous traveling water screens, driven through planetary spur gear speed reducers

Fig. 7—Planetary spur gear reducer, used on a 9-foot ten-disk pulp filter drive (shop view)

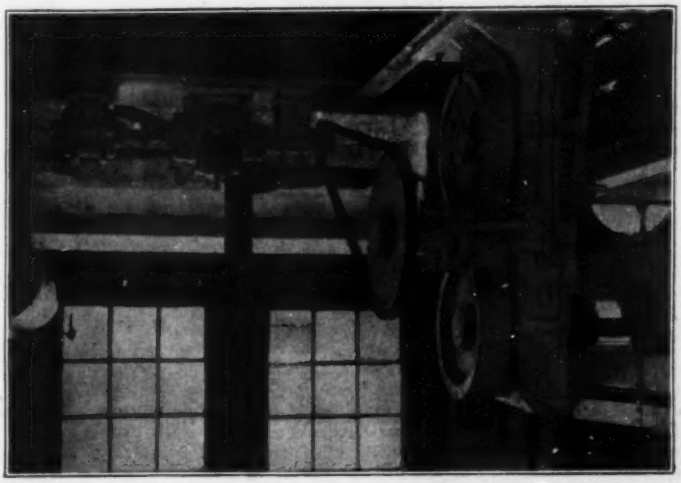


Fig. 8—Spur reducer suspended from ceiling

of double helical or herringbone gears being to eliminate end-thrust, and allow for higher run speeds.

With modern gear-cutting equipment, this type of gearing has attained a high degree of perfection, and it is used to advantage in connection with reduction of very high speeds

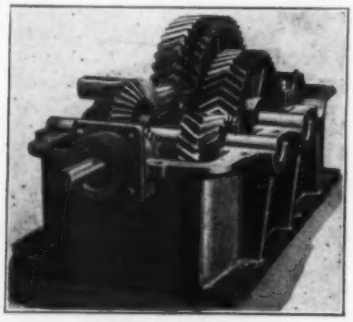


Fig. 9—Angle drive continuous tooth herringbone speed reducer

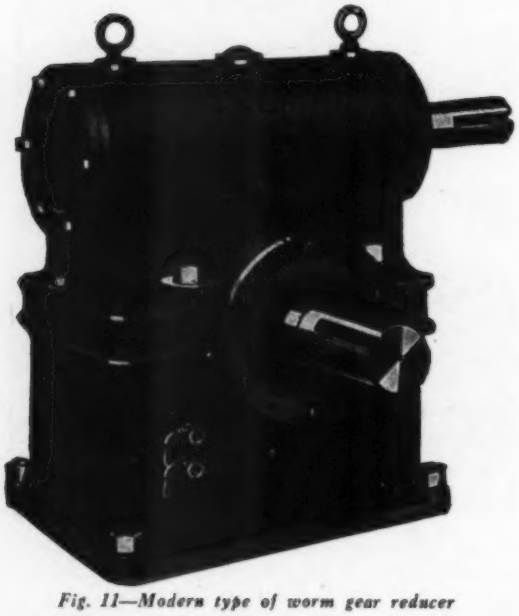


Fig. 11—Modern type of worm gear reducer

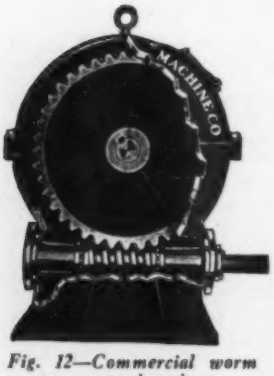


Fig. 12—Commercial worm gear speed reducer

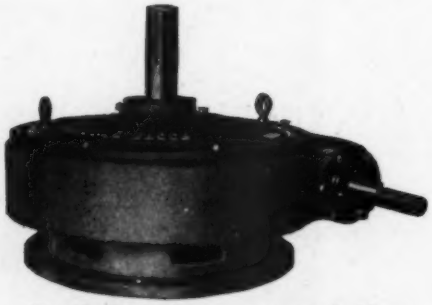


Fig. 13—Vertical worm gear speed reducer

such as are encountered in the operation of steam turbines, certain kinds of water wheels and high speed electric motors. Herringbone gears are also to be recommended where processes depend on smooth operation of the production machinery.

Herringbone gear speed reducers are the natural result of the application of herringbone gears with their many advantages to the enclosed type of reduction unit.

Figures 9 and 10 illustrate the compactness, simplicity and sturdiness of this type. These units can be used on lower reduction ratios for increasing speed, but wherever used for this kind of service, precaution should be taken both as to the design of gears and to the system of lubrication. The full details of service required should be given the manufacturer.

The overall dimensions of the gears and housings of herringbone gear reducers are somewhat in excess of the dimensions of spur gear reducers both of the same power transmitting capacity. This is due to the high speed and slow speed shafts of the herringbone type running parallel, and because the pinion and gear are only engaged at one point

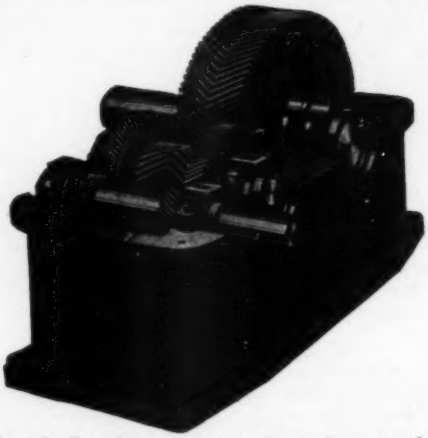


Fig. 10—Straight line drive, two stage herringbone speed reducer

as compared to several points in contact with the spur gear type, with the sun pinion driving the three intermediate gears which revolve within an internal gear. However, by proportioning the sizes of the gears in reduction units of more than one gear train to suit the torque, it is possible to use smaller gears and finer pitches on the high speed and thus minimize the overall dimensions of the housing. High ratios are available in small housings by compounding and tripling the reductions.

Briefly, the advantages of the herringbone gear reducer can be set forth as follows: first, it will handle high initial speeds; second, it will stand shock loads better on account of its tooth construction; third, it will give a smoother transfer of power from one gear to another; fourth, it can be used for speed increasing purposes at lower reduction ratios; and, fifth, generally a herringbone gear reducer will carry a certain amount of overhung load on the extended shafts without the addition of an outboard bearing, but this load should not be greater than what is recommended by the manufacturers.

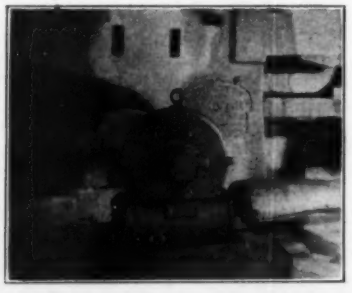


Fig. 14—An Impco (Racher) driven by a worm gear speed reducing unit

Worm Gear Speed Reducers

Worm gear speed reducers and their principles of operation have been known for a long time, but it was not until recently that this type of reducer has received the kind of

attention that brings about constructive development. The worm gear type of reducer has been, and is still considered by many a very inefficient and unreliable means of speed reduction, but recent investigations have brought about improvements in design and manufacturing methods that have resulted in the development of distinctly modern and effective worm gear reducers to meet the exacting conditions of modern industrial service.

These developments have brought the modern gear reducer into a class of high speed, high efficiency and high power transmitting capacity, but the simple compact construction is retained and makes it an ideal drive where space is limited and where the power has to be transmitted at right angles. The efficiency of this type is almost on a par with any other type of reduction unit, and at certain low ratios, the efficiency is as great as the spur type and bevel gear reducers. Due to the simplicity of design and its adaptation to any kind of position and installation, the high efficiency worm gear reducer has found a wide popularity.

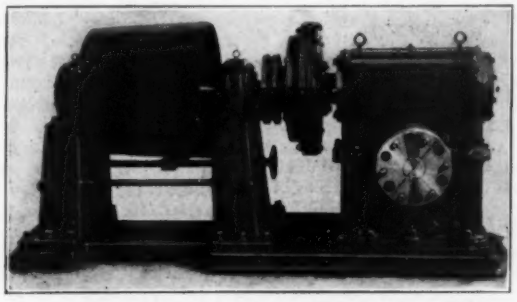


Fig. 16—Another make of the same type of high efficiency worm gear reducer applied as shown in Fig. 15

Worm gear combinations in suitable housings will run in any position vertical, as well as horizontal, and are, therefore, popular as agitator drives and for similar installations. They are made with thrust bearings on the drive shafts to take up the heavy thrust created by the worm, and when correctly installed allow for smooth operation and the automatic elimination of reversal of load when power is shut off.

Figure 11 gives an idea of the general construction of the modern type of worm gear reducer.

From an economical standpoint, worm gear reducers can be divided into two groups; one group is the original development usually equipped with commercially cut worm gears and worms made from some fairly high carbon steel and keyed to a worm gear shaft. Bearings are usually plain steel bearings and depending on lubrication from the splash of the worm and worm gear.

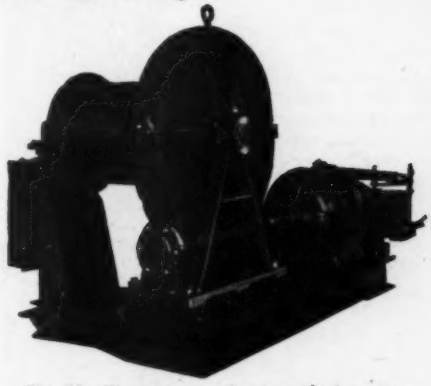


Fig. 18—Worm gear reducer applied to driving a hoist

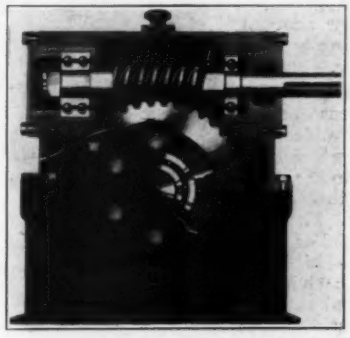


Fig. 17—Advance type worm gear power transformer, detailed to show thrust bearings, and worm head integral with shaft

Illustrations 12, 13 and 14 are views showing general construction of this type of worm gear reducer. Although, perhaps, it appears to be an antiquated type of equipment, it has nevertheless a wide application on a cheap and dependable unit with higher reductions in intermittent and temporary service where the power transmitting efficiency is of no importance. It gives good results on the slow speed end of extremely high reduction; it is a useful timing device as a combination of a few worm gear ratios and would give very high reduction with comparatively few parts. It is indispensable on many hoists and elevators on account of self-locking properties on high ratios.

The public is often confused as to the self-locking ability of worm gears. Several conditions influence this feature, the main being the lead angle of the worm thread. On a plain bearing worm gear reducer, it is safe to assume self-locking when this angle is six degrees or less. This angle will give about fifty per cent efficiency, and in order for a worm gear to lock, the efficiency must be fifty per cent less.

The second group is the new development previously mentioned (Figs. 15, 16 and 17).

In this type all unnecessary friction is eliminated in the shaft bearings by incorporating ball and roller bearings to take care of radial and thrust loads on the worm and worm gears. Thus the efficiency of these units is exceptionally high.

Great care is necessary in the tooth design,

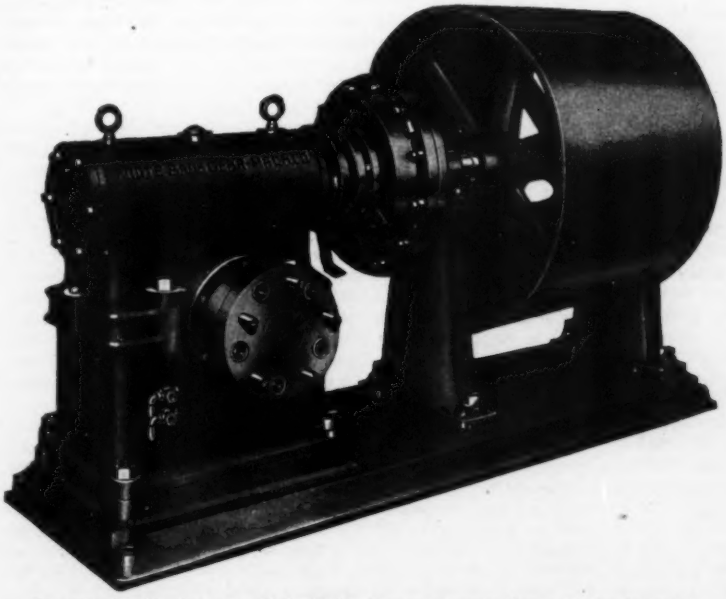


Fig. 15—Application of a high efficiency worm gear reducer to the drive for a fourdrinier machine in a paper mill. Note taper pulley and friction clutch

and specially designed manufacturing tools and equipment are necessary to insure extreme accuracy in the production of worm gears and other parts.

Maximum results are only secured through the use of highest grade materials carefully selected. This, together with close attention to manufacturing processes, insures perfect tooth contact and extreme quietness in operation without vibration.

Uses and Applications

As the worm gear reducer delivers power only at right angles, it is not suitable when driving, and driven shafts must be parallel or concentric. There are, however, many uses for which the high efficiency worm gear reducer is better adapted than any other type of speed reducer.

Because of their almost noiseless operations, they are ideal for driving fans which have a tendency to transmit all sounds that originate near by. They are very successful as right angle drives in large process machines, where unusual smoothness of power flow is required. The horizontal type are also used as right angle reduction drives with electric motors and gasoline and oil engines, often with the slow speed shaft extended on both sides for a double sprocket or gear drive.

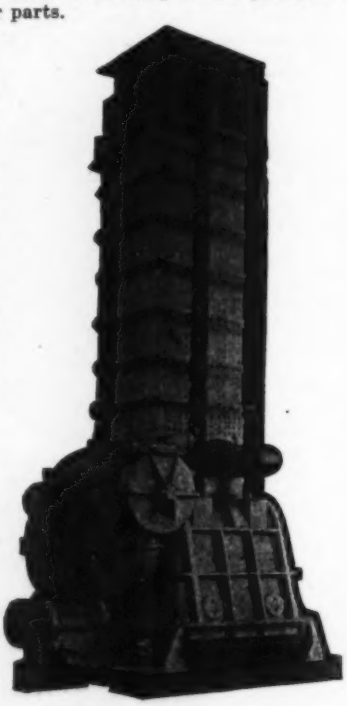


Fig. 19—Combination of one spur gear reducer and three worm gear speed reducers used on the drive for a large pulp grinder—total reduction 35,000 to 1

The vertical type of the high efficiency worm reducer delivers power either upward or downward, or in both directions when desired, through its vertical slow speed shaft. Because of the angular drive, this type driven by a standard horizontal motor makes an ideal combination for driving agitators, mixing and stirring machines, vertical, submerged centrifugal pumps, capstan drives and other machinery operated by vertical drive shafts.

Bailey Meter Acquires G. E. Flow Meter Patents

A new company known as the Bailey Meter Co. on April 1 acquired the flow meter business and patents of the General Electric Co., and the fluid meter and combustion control business and patents of the present Bailey Meter Co.

The engineering, manufacturing and sales organization of the present Bailey Meter Co. will be retained by the new company, with the increase in personnel necessary from the General Electric Co., to handle the additional business properly. The new company will have its factory and general offices in Cleveland, Ohio.

E. G. Bailey, president of the present Bailey Meter Co., will be president of the new company. R. S. Coffin, vice-president of the present Bailey Meter Co., will be vice-president in charge of administration and finances. R. E. Woolley, now connected with the General Electric Co., will be vice-president in charge of engineering and sales. The new Bailey Meter Co. will offer a complete line of flow meters, boiler room instruments and combustion control equipment.

Jenkins Bros. announce the appointment of Joseph E. Hodgkins, as Manager, and Anthony D. Weber as Assistant Manager, in charge of their New England Branch, at 524-30 Atlantic Ave., Boston.

Books, Booklets, Etc.

Barnstead Still and Sterilizer Co., Boston, Mass.—This interesting catalogue, number A, is to the best of our knowledge the first available printed survey of distilled water uses, covering how to select a distilled water still, and how to maintain it for the particular purpose for which it is selected. It is well illustrated with pictures of the various types of stills, and the various places where it is used, such as in industrial and commercial houses and laboratories of chemical testing.

Cameron Machine Co., Brooklyn, N. Y.—A booklet of unusual interest for users of paper and board winders has been received from the Cameron Machine Co., 61 Poplar Street, Brooklyn. Half-tone engravings from well executed wash drawings illustrate the various steps in the manufacture of slitter and roll-winding machines such as are turned out by the Cameron Machine Co. for the use of paper and board mills and particulars are given of the working ranges of Camachines for roll production in paper mills, board mills, converting plants and plants manufacturing paper products. Those receiving the booklet are invited to visit the showroom of the Cameron Machine Co. whenever problems are to be solved that are in any way related to slitting and rewinding. Copies of the booklet can doubtless be obtained on request.

Casein and Its Industrial Applications.—By Edwin Sutermeister. Published by The Chemical Catalog Co., Inc., New York City. Price $5.00.

This twelve chaptered book on Casein and its industrial applications is another of the Monograph series that should meet with favor from the chemical field and those interested and applying it in the industrial world. It is especially valuable as its chapters consist of contributions from various chemical authorities, industrial experts, and government chemists, whose viewpoints have been bound together under the editorial hand of Mr. Sutermeister. The contents is a range from the organic chemistry of Casein to the analysis and testing of casein.

Chicago Belting Co., Chicago, Ill.—Chicago Belting Co. have issued a new 96-page catalog which gives complete illustrations in two colors of the different operations in the manufacture of leather belting and has complete instructions for the operation and maintenance of leather belting, engineering data, horsepower tables, etc., as well as showing their complete line of leather belting, leather halters and mechanical leathers.

Lincoln Welder Instruction Manual.—Published by The Lincoln Electric Co., Cleveland, Ohio. Price $1.00.

The 1927 issue of the Instruction Manual is revised to cover the latest practices used in manual electric arc welding, and should be of interest to anyone who uses arc welding processes. Among the subjects treated are: high speed steel welding, high pressure pipe welding, automobile frames, boiler repairs, welding cast iron, manganese steel welding, carbon arc welding, manufacture of machinery and equipment using welded steel in place of castings.

The Manufacture of Pulp and Paper, Volume III.—Published by McGraw-Hill Book Co., New York City. Price $5.00.

This volume, just printed the fifth time, prepared under the direction of the Joint Executive Committee on Vocational Education representing the Pulp and Paper Industry of the United States and Canada, has certainly shown its desirability and wide usage. This edition of the third volume has been revised to include several important developments in the making of pulp, among which may be included bark presses, automatic grinders, continuous causticizers, pulp washing, and in particular the recovery of fiber that was heretofore lost in mill effluents. The section on bleaching has also been entirely revised under the co-authorship of H. H. Hanson and A. H. Hooker, Jr.

National Lime Association, Washington, D. C.—"Methods of Lime Analysis" is a new manual divided into three sections as follows: Methods of Sampling and Care of Samples; Methods for Routine Analysis, and Methods for Particularly Refined and Detailed Analysis. This manual is intended for use in laboratories of the association and of those manufacturers and consumers who have occasion to keep themselves informed of the chemical composition of their product or raw material. It may be obtained by addressing the Research Department of the National Lime Association, Wash., D. C.

With the Superintendents at Richmond

Plans Are Maturing for the Eighth Annual Convention in the Capital of the South— Notes of Program of Events

IT IS doubtful in the extreme if a city more typical of the South as it exists today could have been selected for the eighth annual convention of the American Pulp and Paper Mill Superintendents' Association on May 26, 27 and 28, 1927, than Richmond, Va.

Richmond still possesses and makes excellent use of those assets which in former days caused it to be known as "the merriest place in America," to be recognized as the center of southern culture and to justify national admission of its outstanding importance as a manufacturing and commercial center. The accomplishments and progress of Richmond during more recent years have warranted the designation of the Virginia capital, as "the hospitable and principal gateway to the real South, a city whose spiritual and physical possessions link it with historical romance and whose phenomenal development along industrial, commercial and financial lines constitutes but a prediction of the achievements destined for realization in the near future."

Members and guests of the American Pulp and Paper Mill Superintendents' Association who visit Richmond on the occasion of the annual convention will be brought into one of the most important tobacco manufacturing centers of this or any other country and, if interested, are afforded opportunities for witnessing the manufacturing process of all tobacco articles. The largest cigar factory in the world is operated here where more than 500,000,000 cigars and 40,000,000,000 cigarettes are produced annually. Here also is located the world's largest wooden-ware manufacturing plant, the largest blotting paper industry in America, the largest plant in the world producing bottled flavoring extracts, the second most important book manufacturing establishment south of New York, the oldest and largest mica mills in the world, and scores of other industries that are leaders in their lines. Publishing, iron and steel industries, paper and paper products manufacturing, fertilizers, and the production of food products rank in order of importance next to tobacco, but in no wise suggest the great variety of articles and goods that are made in Richmond.

Virginia is at its prettiest during the month of May, and a motor trip through the most historic State in the Union would be a great treat. If impossible, to motor, a rail trip will present scenery unsurpassed.

Distances to Richmond

An impression seems to prevail that Richmond is drawn in a corner and can only be reached after a strenuous effort. As a matter of fact it is closer to Appleton, Wis., than New York City. The time it takes in hours to reach Richmond from some of the principal papermaking centers of the country is indicated in the following table:

From	Time in hours
Chicago (through train) via Cincinnati	25
via Washington	21
Cincinnati	14
New York	8
Washington	2:45
Dayton, Ohio, via Cincinnati	16:30
via Washington	22
Holyoke, Mass.	17
Boston, Mass.	16
Portland, Me.	20
Glens Falls, N. Y.	18
Buffalo, N. Y.	15
Cleveland, Ohio	16
Appleton, Wis.	30
Kalamazoo, Mich.	25

Outline of Program

The high spots of the program provided for the forthcoming meeting may be delineated as follows:

Thursday, May 26, is the opening date of the meeting. The Hon. Harry Flood Byrd, Governor of the State of Virginia, will make a welcoming speech on behalf of the commonwealth and be followed by the Mayor of Richmond, the Hon. J. Fulmer Bright, who will greet the visitors as the representative of the city authorities. There will be other welcoming speeches and greetings, one being by Reuben R. Robertson, president of the Champion Fibre Company, with responses by President Fred J. Rooney of the Association and others.

The program of papers is an interesting one, as can be seen by the following tentative list:

Relation of Pulp Purity Factors to Paper, by A. L. Nourse, The Brown Company, Portland, Me.

The Woods Centrifugal Stock Pump, by H. A. McNeille, Fairbanks Morse Company.

Use of Bleached Sulphate Pulp, by D. A. Helder, Champion Fibre Company, Canton, N. C.

Is the Training of Workers by Means of Educational Classes Worth While? by J. Norman Spawn, Champion Fibre Company.

The Degree of Hydration, by Harry Williamson, Champion Fibre Company.

Making Paper White, by Dr. August Merz, Heller & Merz, New York.

Combustion and Powdered Fuel, by a representative of Furnace Engineering Company, New York.

Recent Developments to the Rod Mill, by a representative of the Allis-Chalmers Company.

The Ranarex Company's Recorder, by a representative of the Bird Machine Company, South Walpole, Mass.

Laughlin Centrifugal Washer, by E. K. Mansfield, E. K. Mansfield Company, New York.

Waterbury Hydraulic Speed Control, by a representative of the Waterbury Tool Company, Waterbury, Conn.

Forestry and the Paper Industry, by D. A. Crocker, Woodlands Section, American Paper and Pulp Association, New York.

K. B-Process of Waterproofing, by a representative of the Flint Kote Co., New York.

Sectional meetings are scheduled for Thursday afternoon, with the following chairmen: Chemical and Mechanical Pulp, J. A. Bowers, Hammermill Paper Company, Erie, Pa.; Board and Coarse Papers, Charles L. Ellis, Downingtown Mfg. Co., West Downingtown, Pa.; Book and Fine Writings, W. S. Brooks, Champion Fibre Company, Canton, N. C.; Newsprint, Geo. K. Walker, Finch, Pruyn Company, Glens Falls, N. Y.; Mechanical Appliances, Herman S. Harrigan, District of Columbia Paper Company, Washington, D. C.

The social features of the meeting include a joint banquet of the gentlemen and ladies for Thursday night, to which a large number of Richmonders will be invited. The speaker at this banquet will be Dr. D. W. Daniel, of Clemson College, who is known as "The Humorist of the South."

Following the banquet and preceding an old fashioned southern dance, "A Night in Old Virginia" will be presented by Miss Ruby Vaughan Bigger.

On Friday afternoon the delegates and visitors will be taken for a visit to three of the larger mills and a tour of the battlefields of the Seven Days Fighting Around Richmond. The battles will be described by Dr. Douglas S. Freeman, editor of the *News Leader*, who is just as much at ease on the battlefield as he is at his desk.

Friday night the ladies and gentlemen will dine separately, each having a selected list of speakers. Among the speakers at the men's banquet will be Sir Charles Bartholomew Goure, president of British Papers, Ltd. Shortly after the separate banquets, the members and visitors will assemble in the auditorium for the feature entertainment of the convention. One of the numbers is "An Evening with the Olde Time Darkey" by Doug Leftwich.

Saturday will be devoted to discussion of mechanical appliances, sightseeing and side trips to many of the historical places around Richmond.

Reduced rates have been made from all points and, in purchasing a one-way ticket to Richmond, members and visitors must ask for a reduced rate certificate entitling them to a reduction of fare on the return trip, which must be to the same place started from over the same line, amounting to half the regular fare. Certificates will be accepted by railroad agents for purchase of return tickets until midnight, June 1, 1927.

Carton Packing for Fine Paper

Informative Report Submitted and Resolution Adopted at Chicago Meeting of Carton Packing Committee

AT A meeting of the General Carton Packing Committee of the American Paper and Pulp Association and the National Paper Trade Association, held at the Blackstone Hotel, Chicago, Tuesday, April 5th, 1927, the Writing Paper Manufacturers Association submitted an informative report on carton packing for fine paper, which was filed and no action taken on it by the General Committee. The complete report follows:

REPORT

Within the past few weeks, certain paper merchants of the Middle West have issued requests to the paper mills that small orders of paper hereafter shall be shipped in cartons. These notices also state that considerable investigation has been done by these paper houses and that they have found this a desirable method of packing.

The principle of carton packing should not in any way be affected by the misplacement of credit, for after all, no one is looking for credit, except that a large majority of the paper merchants, and all the paper manufacturers, prefer to follow the careful investigations of their own committees rather than the dictates of any independent houses.

The story of the investigation of carton packing is one that goes back several years.

At a meeting of the Writing Paper Manufacturers Association held in July, 1922, a paper on carton packing was presented by one of the members. He already had made a considerable study of this, and at the request of the association, was asked to present his findings in a preliminary form. At that time, the question of this new method of packing was discussed, because the manufacturers and certain of the paper merchants at that time recognized that sooner or later a new unit of packing would doubtless be developed as a result of the increasing small order business. The growth of this small order business is nothing which is confined to the paper industry but is a general trend of the times throughout the country.

The paper manufacturers have continually been striving to better their product, reduce their costs, and improve their service to their customers and while considerable progress has been made in paper mills in machinery and manufacturing methods and in the adoption of personnel and cost work, the packing and shipping of fine papers had, up to this time, received little or no consideration.

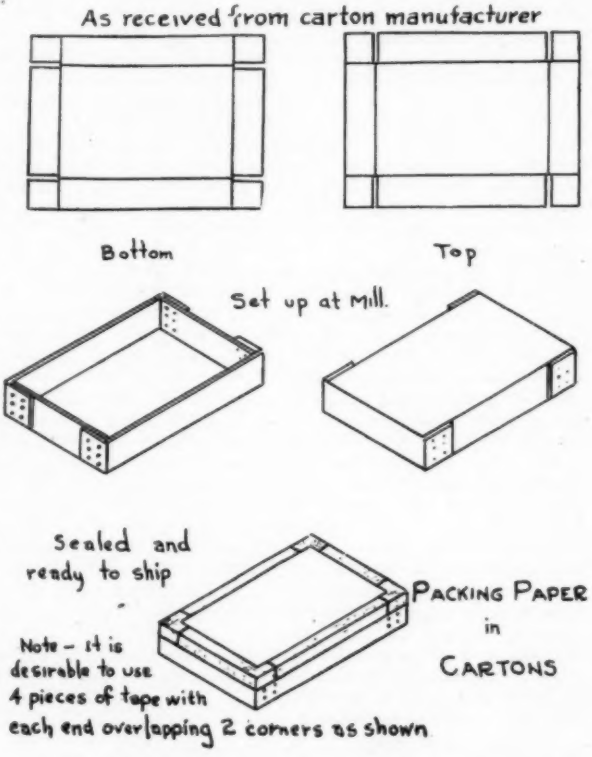
The Writing Paper Manufacturers Association recognized that the small order problem was one which demanded the most serious consideration, and was an important factor in merchandising. Therefore, a committee was appointed to begin a thorough and exhaustive investigation of this matter and at the same time, the co-operation of the National Paper Trade Association through a similar committee was sought and received.

The Container Testing Laboratories at Rockaway, New Jersey, which is a scientific organization maintained by the manufacturers of containers in this country and is headed by Mr. A. W. Luhrs as an expert in his field—was asked to make the tests for the committees. Various manufacturers sent different grades and weights of paper to Rockaway and these were tested in different apparatus there until a desirable standard carton container was developed. At the same time, certain selected mills shipped small quantities in cartons to certain merchants who experimented in the handling of them in their warehouse and in other ways. The results in every instance over-exceeded the anticipations of the most sanguine manufacturers and merchants.

Paper up to 160 lbs. was packed in a carton and put into a large tumbling drum and thrown around in a way which over-exceeded the roughest handling in transit. Fire hoses were turned on these cartons; steam was used; everything possible by the way of abuse was heaped upon them, and yet when opened, the paper was found to be in excellent condition as if nothing had happened from the time it had been placed in the carton.

The railroads were consulted, and after presentation of facts, all rates and arrangements were made with them, who endorsed this standard carton which is being suggested. The Committee further discovered that not only could the merchants' handling costs be reduced, but a saving in freight could be made to the manufacturers.

Based upon the preliminary experiments, the committee of the Writing Paper Manufacturers Association felt that the work of investigation was of interest to all branches of the paper industry. Consequently it asked the American Paper & Pulp Association to appoint a General Carton Packing Committee to work in co-operation with it and with the Committee from the National Paper Trade Association. This larger committee now includes among its members manufacturers of


As received from carton manufacturer
Bottom
Top
Set up at Mill.
Sealed and ready to ship
Note – it is desirable to use 4 pieces of tape with each end overlapping 2 corners as shown
PACKING PAPER in CARTONS

Writing, Cover, Bristol Board, Wrapping Paper, Waxed Paper and Paper Specialties.

The object of the larger committee was to obtain reliable information:

1—As to the advantages and disadvantages of other methods of packing to manufacturers, merchants and printers.

2—To determine which of the various methods of packing would be most desirable for the manufacturer, the merchant and the printer.

3—To work out a series of recommendations or specifications which would insure the arrival of the paper to the consignee in satisfactory condition.

4—To obtain the approval of the railroads to the recommended plan.

This is now all an accomplished fact.

The Committee has found that a package which will safely carry up to about 160 pounds instead of using a wooden case, holding about 500 pounds of paper, would result in certain advantages to the printer, the merchant and the manufacturer. The committee recommends, however, a package from 120 to 140 pound weight as the most efficient. The advantages referred to are:

Advantages to Printer

Elimination of spoilage in stock of broken packages.

Release of portion of storage space.

Elimination of wrinkled paper and swollen edges due to damp lumber.

Convenience of re-using containers for delivery of printed matter to customers.

Ease of handling cartons in stock room.

Advantages to Merchant

Elimination of labor expense in repacking of "Small Orders" down to 1 carton.

Elimination of material expense in repacking "Small Orders" down to 1 carton.

Reduction in freight on out-of-town shipments.

Reduction in storage space for stock. (Paper packed in cartons saves approximately 2 cu. ft. for every wooden case in stock).

Elimination of spoilage in stock of broken packages.

Elimination of damage to paper from damp lumber and damp chipboard fillers.

Advantages to Manufacturer

Reduction in warehouse labor and overhead.

Fuller loading of cars.

Elimination of damage to paper from damp lumber and damp chipboard fillers.

A saving in freight.

A saving in space. (Paper packed in cartons saves approximately 2 cu. ft. for every wooden case in stock).

It has been found that the merchants will probably make the largest saving. This is due principally to a reduction in labor and high rental space, as well as material and overhead expense. That this is a fact may be illustrated in the case of envelopes.

Some years ago following the presentation of the original report, several progressive envelope manufacturers changed their method of packing from the old wooden cases, containing 20,000 or 30,000 envelopes, to a carefully worked out schedule of cartons, carrying from one and one-half thousand up, depending upon the size, and designed to meet their merchants' small order problem. At the same time, through the co-operation of the merchants, the basis of mark-up was reduced in many cases. It has been found that full carton quantities could be handled by the merchant on a basis of approximately 10 per cent less mark-up than was the case under the old method. Furthermore, carton packing resulted in a practical elimination of the unprofitable small envelope order. It also resulted in a great saving of expense warehouse space, elimination of spoilage, and in a reduction of handling charges for the merchant. In fact, the adoption of this new unit of packing corrected a most unsatisfactory and unprofitable method of business for the distributors and resulted in economies to the ultimate consumer.

Details of the report which has been submitted to and approved by the Writing and Cover Paper Manufacturers Associations, as well as their merchants and the printers are as follows:

Comparative Costs

Handling, packing and completely assembling 1 case....$1.86
Ream wrapping per case..... .70

Total $2.56
Or.....$.197 per ream
Or..... .005 per pound
These figures being based on 1 case of 13 reams 22x34–40.

* * *

The results of investigation on carton cost based on tests made at the Container Testing Laboratories, Rockaway, New Jersey, on cost surveys at paper mills, and by actual shipments are as follows:

Handling, packing and completely assembling 1 carton..$ .41
Ream wrapping per carton..... .16

Total .....$ .57
Or.....$.19 per ream
Or..... .00475 per pound
These figures being based on packing 1 carton of 3 reams 22x34–40.

* * *

Figuring the wooden case of 13 reams would weigh 520 lbs., 4 1/3 cartons would equal 1 wooden case. The cost of 4 1/3 cartons (the equivalent of 1 wooden case) would be $2.47 as compared with $2.56.

The figures used in estimating these carton costs are conservative in all respects and it is probable that some further reduction might be possible.

Comparative Freight Costs

One of the largest savings accruing from the use of carton packing and benefiting both merchant and manufacturer is the saving in freight.

The tare on wooden cases will run about 75 lbs. for a 520-lb. case, which means for every 100 cases shipped you are paying freight on 7500 lbs. of lumber.

As a carton weighs approximately 10 lbs., 4 1/3 cartons would weigh 43 lbs. (which would pack 520 lbs. of paper). This means that for the equivalent of every 100 cases packed in cartons, you would be paying freight on 4300 lbs. of container board or a saving of freight on 3200 lbs. of packing material.

* * *

Assuming a 50c freight rate, a 10-lb. carton costs .05 for freight or .017 per ream.

Wooden cases weighing 75 lbs. at a 50c freight rate cost 37½c for freight or .029 per ream.

The saving in freight per ream, therefore, would be .012 per ream or .0003 per pound.

* * *

To put it another way, the ratio of the weight of paper to the weight of the lumber in wooden cases is 520 lbs. to 75 lbs. or 6.93 lbs. of paper to 1 lb. of lumber. While in the case of a carton it would be 520 lbs. to 43 lbs. or 12.09 lbs. of paper to 1 lb. of container board, or a 75 per cent increase in the tonnage carried per pound of container material.

Tests

It has been demonstrated by tests that paper will carry satisfactory in solid fiber and corrugated cartons up to a maximum gross weight of 175 lbs. per carton, provided the cartons are made according to the following specifications. These specifications being designed for flat stock, sizes 17x22 and larger.

	Minimum Mullen Test	Minimum Thickness Solid Fiber	Caliber of Liner
Below 65 lbs. gross	200	.080	.016
65–95 lbs. gross...	275	.100	.030
90–175 lbs. gross..	400	.115	.030

For all shipments covered by the above weights, full telescope containers are recommended as follows:

Bottom pieces of telescope box to be slotted on the ends. Flaps to be stitched on the outside. Top pieces to telescope boxes to be slotted on the sides. Flaps to be stitched on the outside.

The reason full telescope boxes are recommended is because tests have shown them to be most suitable for the purpose in addition to which they readily take up any slight variation that may occur in the bulk of the paper due to overweight or underweight.

It is suggested that the length and breadth of the box be made ⅜ in. larger than the dimension of the paper contents. The depth ⅜ in. less than the height of the paper to be shipped in the box.

It is recommended that cartons weighing 90 lbs. or less be securely sealed with tape not less than 4 in. wide and testing not less than 60 lbs. per square inch Cady or Mullen test, and cartons weighing over 90 lbs. be sealed with tape not less than 4 in. wide and testing not less than 90 lbs. per square inch Cady or Mullen test. (See illustrations showing method of sealing with overlap of gummed tape at the corners to properly reinforce carton.)

Classification

Shipping in solid fiber cartons in any weight as recommended in this report is in accordance with existing freight classification and is covered by item 22, page 332, and item 11, page 335, of Consolidated Freight Classification No. 4.

Please note that while solid fiber cartons may be used for the shipment of paper in any weight, corrugated strawboard containers of 90 lbs. and over are not allowed at present. Steps are being taken, however, to amend the freight classification to include corrugated strawboard cartons carrying gross weights of 90 lbs. and over.

The shipment of merchandise in fibre board and corru-

gated containers in general is fully covered by rule 41, page 23, of the Consolidated Freight Classification No. 4.

General Notes

There is already on the market inexpensive mechanical equipment for moistening and cutting gummed tape which will greatly facilitate and speed up the work of sealing cartons.

The committee recommends that members of the Writing Paper Manufacturers' Association order their cartons in the flat but die cut and scored, ready for assembling, and that they install a stitching machine to assemble the cartons as needed. (See accompanying sketch.) The cost of cartons in the flat is lower and the storage space much less when handled in this manner. One operator (who in most box plants is a girl) can easily stitch up 40 cartons per hour. An experienced operator can better this quantity considerably.

While the committee believes that ream wrappers may be eliminated, data is not sufficient nor conclusive at the present time to make definite recommendations.

As his report is summarized and condensed for convenience, the committee suggests that any of the Writing Paper manufacturers desiring additional information get in touch with Mr. E. H. Naylor, Secretary of the Writing Paper Manufacturers' Association, at 44 Vernon Street, Springfield, Massachusetts.

Following the presentation of the above report and general discussion, the following resolution was proposed and adopted:

Resolution

Whereas, Investigations as to the use of cartons for shipment of various grades of sheet paper have been carried on for the past two years by the Container Testing Laboratory of Rockaway, N. J., under direction of the Committee, and with the co-operation of certain manufacturers and merchants, and

Whereas, This new method of packing must be based upon thorough and complete facts as to the quality, weight, size and sealing of such containers, and

Whereas, There has been expressed a general interest in carton packing of paper by the manufacturer, the merchant and the printer, and

Whereas, The question of the use of cartons must be finally settled on a sound and practical economic basis; therefore, be it

Resolved, That as a matter of information to date the facts should be given to the manufacturers, the merchants and the printers interested and to the trade press, but that final action by any association or group on the adoption of the carton as a method of shipment be held in abeyance until such a time as further investigations of all grades of paper be concluded.

The foregoing resolution in no way commits any of the associations of manufacturers, merchants or printers to the use of cartons for the shipment of paper except in so far as each individual may wish to apply the findings to date.

Attendance at Meeting

Kimberly Stuart, Neenah Paper Co., Chairman; R. F. McElwain, Crocker, McElwain; E. F. Fletcher, Hammermill Paper Co.; S. L. Willson, American Writing Paper Co.; Z. W. Rauck, Crystal Tissue Co.; W. N. Gillett, Chicago Paper Co.; Charles Addoms, Miller and Wright Paper Co.; W. C. McLaughlin, Union Paper Twine Co.; A. W. Leslie, John Leslie Paper Co.; Leon Beck, Charles Beck Paper Co.; Forest Hopkins, Paper Mills Co.; Albert W. Luhrs, Container Testing Laboratory; N. A. Schoenbucher, National Paper Trade Association; E. H. Naylor, Writing Paper Mfrs.' Association; Hugh P. Baker, American Paper and Pulp Association.

At the spring meeting of the American Chemical Society in Richmond, the symposium of lime will include a discussion of the problems of bleach manufacture by A. H. Hooker, of the Hooker Electrochemical Co., and the question of water softening and purification by C. P. Hoover, of the City Purification Works, Columbus, Ohio, with L. F. Warrick, of the Wisconsin State Board of Health, talking on the kindred problem of treatment of trade wastes.

Paperboard Industries Meet In East

Lively Discussions and Important Decisions Mark Association's Best Attended Meeting

IN MEETINGS which were best attended since the organization of the Paperboard Industries Association, members of the association convened at the Waldorf-Astoria Hotel, New York City, March 23 and 24.

Group sessions were held, with a joint session winding up the meeting, and summary of meetings and decisions as follows:

Folding Box Group

The Folding Box Group met on March 23, with Vice President H. S. Hinkle presiding. His paper, which he read, entitled "Disregard of the Ethics of Honest and Fair Competition," met with enthusiastic applause. It dealt with the need for better salesmanship and elimination of waste now existing in the industry.

Members offered suggestions as to fields into which the use of folding boxes may be introduced or increased.

Grafton Whiting, statistician, reported on the following items: depreciation; census of the folding box industry; and explanation of folding box charts.

A resolution was adopted, requesting the statistical committee to collect and compile information from member companies, with a view to developing the earning power of the folding box industry in 1926.

Suit Box Group—The meeting gave consideration to the suggested establishment of a group, within the association, to be composed of folding box manufacturers, chiefly interested in the production of suit boxes.

Paperboard Group Meeting

Members of this group met on Wednesday, March 23, with Vice President W. J. Alford, Jr., presiding. He submitted a very constructive report, in which he made particular mention of an effort to increase the membership in this group. He also reviewed paperboard operations during recent months.

Grafton Whiting reported on the following: depreciation; census of the paperboard industry; statistics on pulp, and co-operation with the American Paper and Pulp Association in the collection of statistical data.

He also explained the paperboard group charts and summaries. This data has been prepared in booklet form, and copies have been sent to each member of the association. Mr. E. W. Knutson, recently employed as assistant statistician was present, and introduced to the members.

The group endorsed a program for securing and compiling figures showing operations in 1926 from the standpoint of gross sales and profit for the industry as a whole.

Mr. Whiting announced that a uniform plan of accounting for mill operation was available to members of the paperboard group.

There was a discussion as to the quantity of waste paper which a paperboard mill should keep on hand. The opinion was expressed that considerable capital is often needlessly tied up by carrying stocks which are excessively large. The meeting directed the vice president to appoint committees, representing the different territories, to meet with paper stock dealers, and develop facts regarding the present situation and recommendations in connection with the gathering and sale of waste paper.

Container Group Meeting

This meeting was held Thursday morning, March 24, with John L. Barchard, president of Hummel & Downing Co., presiding in the absence of Vice President Irving Hill.

General Manager Browder submitted an interesting report of "Container" subjects, with particular mention of the following: (Docket 30: April 1927 hearings) Form of box maker's certificate; proposed change in section 7 (a), rule 41, regarding use of excelsior pads; fiber boxes with hand holes or perforations for ventilation; box-bags for use as shipping containers, and cord, (bars, slabs, etc.) in corrugated boxes. Other subjects were: knit underwear and outerwear in oversize and overweight boxes; export trade in fiber containers; bureau of explosives matters; specifications for

canned foods boxes for U. S. Navy; relations with gummed tape manufacturers' association, and factory inspection by association inspector.

General Manager Browder made the following explanation with respect to the revision of I. C. C. shipping container specifications—containers for shipment of dangerous articles:

"At the suggestion of the Interstate Commerce Commission, the Bureau of Explosives is making a complete revision of the Bureau of Explosives' pamphlet, containing regulations and specifications for containers used for the shipment of so-called 'dangerous' articles. This revision will cover wooden boxes as well as corrugated and solid fiber.

"The existing specifications contain so many amendments and exceptions that it is occasionally quite difficult to determine just what container and packing is required for a specific article. In the rearrangement of the provisions, the bureau has started at the very beginning and has arranged the specifications in table form somewhat similar to the form in which the specifications are contained in our handbook.

"When finally completed and published under the authority of the Interstate Commerce Commission, and we have the opportunity to reprint the regulations and specifications, the material will, we believe, be in understandable form. Under the revised regulations, the size limit and weight limit governing shipments in fiber boxes are being raised, and, on the whole, the revision will open up additional business to the fiber container industry."

Chairman Signey Frohman reported on the following standardization subjects: Information contained in certificate of box maker; shipper's application for permission to use "box-bags" as containers for shipment of fragile articles; new style of packing for radio set; fiber boxes with hand holes or ventilation holes; Navy Department specifications for canned food boxes; and correspondence with Bureau of Explosives regarding basis of Mullen Test.

The statistical reports covered the subjects of depreciation, census of the fiber container industry, and also an explanation of the statistical charts.

This group endorsed the program adopted by the Folding Box and Paperboard groups with reference to the collection of statistics showing operations in 1926 from the standpoint of profit on sales.

Following this meeting, luncheon was served, and members convened for the Joint Session in the afternoon.

Joint Session.

In the absence of J. P. Brunt, who is now abroad, H. S. Hinkle, president National Folding Box Co., New Haven, Conn., and vice president of the Folding Box group, presided at the general meeting of the three groups.

The report submitted on action and recommendations of the Executive Committee covered the following: Finances; appointment of delegates to annual meeting, Chamber of Commerce of U. S., Washington, May 3, 4, 5, 1927. (J. P. Brunt was named as official delegate, and John L. Barchard as alternate.)

At the general meeting, reports were submitted by the officers, who presided over the group meetings, covering action taken at those meetings.

The general manager's report covered the following subjects: General association activities, including the effort to increase the membership staff personnel, and discontinuances of Mellon Institute contract; relations with American Railway Association, mention being made of talk before shippers and freight claim officers in St. Paul, March 3; export trade in fiber containers; reseach and laboratory reports, and sales promotion and publicity.

Members elected to rotate the schedules of group meetings on May 18, so that the Folding Box group will meet in the afternoon, and the Paperboard group in the morning. The Container group will meet on May 19th, in the morning, with a joint session of all three groups on the afternoon of the same day.

Chairman Henry D. Schmidt submitted an interesting report of sales promotion activities during the past two months.

Chairman J. J. Brossard submitted a report on research questions, with particular reference to printing ink and stream pollution.

Members elected to revise Article 28 of the Association Constitution to read as follows: "This constitution may be amended, revised or repealed at any regular or special meeting of the membership provided at least fifteen days' notice of the proposed amendment be given to the membership by mail. Any proposed amendment must be approved by two-thirds of those present and voting. Members present, but not voting, shall nevertheless be counted for the purpose of establishing a quorum."

The joint session ratified the action taken by the three individual groups for the collection of figures from member companies showing the relation between gross sales and profits in the paperboard industries in 1926.

The next meeting will be held in Chicago, on dates mentioned above, but the hotel has not yet been announced.

High School Modern Paper Exhibit

Over Fifty Paper Mills and Merchants Contribute Material to Ohio Exhibition

THE McKinley High School of Canton, O., goes on record as the first high school to have ever presented a modern paper exhibit, which extended out into the interest of the general public, as well as a display of the work in the printing department.

This exhibit was held from January 31 to February 25, and during this period talks were given at the exhibit by prominent local persons, as well as films viewed in connection with the show.

Step by step, papermaking, both of rags and wood, bottled ingredients, booklets, and pamphlets, told of trips through paper mills, and stress was laid on telling how enameled, coated and uncoated papers were made, besides showing the value of colors in paper, and the various styles of printing being illustrated.

The exhibit was an astounding success due largely to the splendid co-operation of the exhibitors, who did everything in their power to aid them in their endeavor. This spirit on the part of the industry is commendable, and will instill in these young future citizens the desire to enter the paper industry, where, located in the heart of one of the most thriving paper communities in the country, many future executives may be in the making.

Some of the outstanding exhibits were those of the Japan Paper Co., New York City; The Millcraft Paper Co., Cleveland and Toledo, O.; S. D. Warren, Boston, Mass.; The Beckett Paper Co., Hamilton, O.; The New York Times; The James White Paper Co., Chicago; The American Type Founders Co., Jersey City, N. J.; The West Virginia Pulp and Paper Co., New York; The M. H. Birge & Sons, Buffalo; The Champion Coated Paper Co., Hamilton, O., and A. M. Collins Mfg. Co., Philadelphia.

We wish to take this opportunity to congratulate McKinley High School, Canton, O., for its noteworthy work and idea in undertaking this exhibit, and to extend the thought to those who aided these future citizens, that we trust this is only the beginning of such co-operative and inspiring educational work.

Fourth Graphic Arts Exposition

Paper Mill Executive on Directory Board

WITH eighty-six concerns already on the list, and a steady increase of tentative exhibitors each week, prospects for the Fourth Educational Graphic Arts Exposition are indeed promising. This year the exhibition will be held in Grand Central Palace, New York, September 5-17, where three large floors have been engaged for the show.

C. W. Chabot, Advertising Manager of the Hammermill Paper Co., is on the Board of Directors for the Exposition, which lends importance to the fact that paper mills will have a place on the program. The Hammermill Paper Co., and Strathmore Paper Co., have already contracted for space in the exhibit. This exposition should be a splendid opportunity for the papermaker and the printer to become more closely allied, and derive greater co-operation between one another.

The exhibition will be most comprehensive, and will not

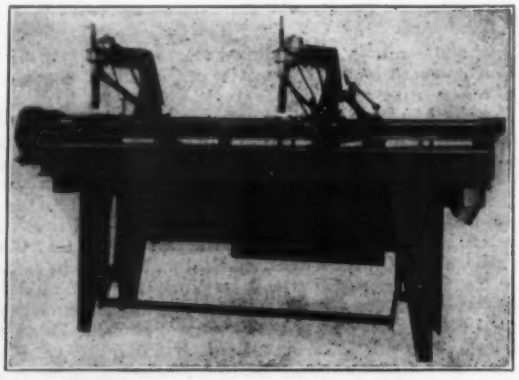
only display the varied and familiar types of presses and machinery used in printing, lithography, rotogravure, binding, but dozens of accessories and modern appliances will interest visitors, such as humidifiers, tying machines, lift trucks, imported type, bronzing machines, book cloth, saw trimmers, offset presses, cork foundations, matrix-making machines, paper testing mechanism, all sorts of inks, machines for casting, perforating, typesetting, creasing, embossing, engraving and imitation engraving processes, and electrotyping. Furthermore, these will be displayed and demonstrated in such a way that the layman as well as the technical expert will know what it's all about.

The location, purpose, and interest that is being manifested not only in this country, but in a great many foreign countries as well, points to a live opportunity for all exhibitors. The three areas in the Grand Central Palace cover space as follows: first floor, 27,500 sq. ft.: second floor, 18.000 sq. ft., and third, 19,000 sq. feet, and this is all saleable net space for exhibition purposes, exclusive of aisles, figuring approximately $220,000 for the three floors. Going as rapidly as it has of late, those who have intentions of exhibiting at the exposition should get in touch with A. E. Giegenback, Exhibition Manager for full particulars, as soon as possible.

New Butt Welding Machine

The Lincoln Electric Co., of Cleveland, Ohio, have perfected their new Butt Welding Machine, shown in the illustration, which is a further development of the machine driven carbon arc in the problems of welding.

A plug may be welded into the end of a tube with the arc butt welder very easily, and the machine illustrated welds both ends of the tube at once by use of the two automatic heads. A similar instance of applicability is that of welding



a small diameter round bar to a large diameter bar. With the arc butt welder, the welding heat is applied to the joint by the carbon arc, and the bars are revolved to distribute the heat uniformly. Pressure is applied to squeeze out the slag and complete fusion.

Use of the arc butt welder does not involve the usual power supply difficulties encountered with resistance butt welding.

New Economical Six-Sided Grease Cup

Link-Belt Co., of Chicago, Indianapolis, and Philadelphia have announced a new six-sided malleable iron compression grease cup with Alemite or Zerk fittings, known as the Link-Belt Hex-Top Grease Cup.

Its economical advantages can be shown as for instance in the lubricating system of a long belt conveyor where many grease cups are used for the idlers, and the easiest, quickest and most economical way is to fill all the cups at one time with a grease gun applied to the Alemite fitting, when the cap is turned up to a high point, but not entirely unscrewed or removed. Filling is accomplished without waste or inconvenience, and a good reserve remains in the cup for use, an occasional slight screwing down by hand or wrench only being necessary until it is time to have a general refilling of the cups. The cup is readily filled in the most inaccessible places by virtue of the hex-top head.

Howe Truck Re-Christened

The small, three-wheeled truck so popular for hauling and storage of loose, bulky materials, manufactured by the Howe Chain Co., of Muskegon, Mich., has a new name—Jak-Tung. The jack tongue, which hooks into the draw bar leg, and by a downward thrust enables the raising and hauling of a load anywhere in congested quarters, is the source of its new name.

Built in 17 different sizes and 3 models, with steel or hardwood platforms or trays, it has grown in favor as a conveyance because materials are kept on wheels from one operation to the next, eliminating congestion, spoilage, and expense of double handling.

Oldest Member of Forest Laboratory Retires

On March 3, Joe Laing, veteran papermaker, and the oldest member of the pulp and paper staff, retired from the service U. S. Forest Products Laboratory. His long term of service marks a continuous and interesting lifetime experience in the trade.

Both Joe's grandfather and father were papermakers. He remembers when a boy watching his grandfather at work on the beaters for the Tileston & Hollingsworth mill in Boston. By the time he was sixteen he had worked in the paper mills near his New Jersey home long enough to become interested in papermaking, and had already sustained a permanent injury to one hand in the dryers. Regardless of the injury, shortly after that he started to earnestly learn the trade at the Riverside Paper Company's mill at Holyoke, Mass.

With his trade well in hand, he soon began a "rolling stone" acquaintance in the paper trade, and numbers among his experiences working in the states of Maine, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Virginia, Tennessee, Minnesota, Michigan and Indiana. During the early days of modern papermaking in Japan, he was in charge of a mill there for three years.

Before leaving the Forest Products Laboratory, Mr. Laing was the guest of honor at a dinner attended by fifty members of the staff. A number of mementoes of his years at the laboratory were presented to him.

Goeppinger with Waterbury Tool Co.

Otto J. Goeppinger, paper mill engineer, connected with the Armstrong Machine Works, Three Rivers, Mich., for several years past, is now with the Waterbury Tool Co., manufacturers of the Waterbury hydraulic variable speed gear for paper mill machinery.

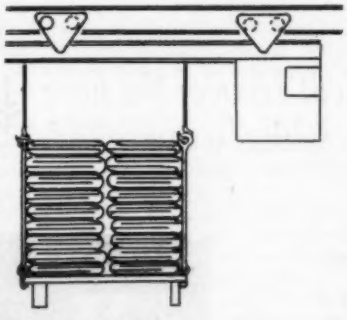
Mr. Goeppinger was educated at Stuttgart, Germany, and before coming to the United States was on the engineering staff of J. M. Voith, Heidenheim, a firm universally known as builders of paper machines and magazine grinders. In New York, he was connected as sales engineer with the American Voith Contact Co. He has also had considerable paper mill experience with Kimberly-Clark Company at Niagara Falls, N. Y., and Niagara, Wis., mills.

John J. Spinelli, of 16 Park Row, N. Y., has announced the removal of his paper mill supplies office to Transportation Bldg., 225 Broadway, N. Y., where he will have larger quarters on or before May 1.

Practical Helps for the Mill Man

Handling Material Over the Same Route

IN SHIPPING or receiving lap pulp, it is pretty nearly necessary to use lift truck platforms or four wheeled trucks, and handle each lap on and off of the truck or platform. However, where the trucking to or from the cars is always done over the same route, a part of the gang can be eliminated by the use of an overhead trolley system.

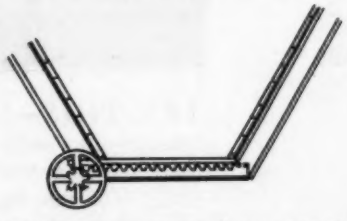


After the platform is loaded, it can be picked up by the electric hoist and run along to its destination with a great saving of time. It would be conceivable that all the trucking from the place where the platform was loaded, to the place where it was unloaded, could be handled by one man.

Even where there is a low overhead in the rooms through which the overhead system would pass, the problem would be solved by the type of overhead tram which carries the operator slung in a chair from the traveling hoist. With such a system, only the gang working in the car, or at the loading point of the platform, and again at the unloading point, would be necessary. The men strung along the way pulling trucks of any kind would be eliminated. Other savings, such as elimination of wear on floor, and upkeep of trucks or lift truck masters, can be imagined.

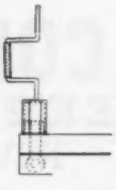
Gear and Wrack on Chip Bin Opening

IN GOING about the various mills, one sees a good many slides closing the holes in chip bins over the digesters, which have to be opened with a bar and hammered home again when they are shut. Such slides usually run in two grooves and are opened and closed by means of a rough handle at one end. They are rather difficult to push and pull against the rush of the pouring chips, backed by the weight of chips in the bin. The sketch shows a simple gear and rack attached to a slide across the bottom of the chip bin. To each slide over a digester, there should be two racks and two gears operated by the one handwheel. This gives the man filling the digester much easier control over his slide and saves time and wasted energy.



Wrench for Nuts on Digester Cover

IN ORDER to get additional speed in the opening and closing of the cover to the digester, one sulphite mill superintendent has abandoned the usual long handled spanner for the wrench shown in the sketch. This is made in dimensions that will give the necessary leverage for starting the nuts and for setting them up tightly when closing the digester.

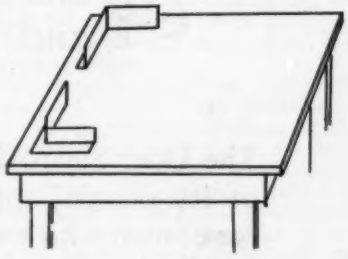


Felts for a Suction First Press

FELTS for a suction first press can be obtained from the second and sometimes the third presses of other machines where they are slightly wider by taking these second and third press felts when they are worn threadbare, but not damaged at all and saving them for the suction press. On newsprint, a suction press will stand a felt which has much less nap than can a regular press. By following this procedure, newer felts can be kept constantly on the second press and more life eventually obtained from the felt as a whole.

Movable Corners for Paper Sorting Tables

WHERE paper sheets are being handled on tables for inspection, for plating, for sorting, or for any purpose whatsoever, a corner built onto the table is more nuisance than it is worth. Boxes are also very difficult to use. The best device is a set of corners as shown in the diagram. These corners are made from heavy angle iron about 3 x 6 x ⅜. They can be even thicker without causing any trouble. The three-inch flange rests on the table and is heavy enough to keep the six-inch flange erect. A pair of these may be set for any size of sheet and are a great convenience.



Improved Core Tips

PAPER mill men, especially newsprint men, are particularly interested in a new tip for paper cores. In the former tip, shown in Fig. 1, the tip is held in place only by the four punch holes, of which two are shown to the right and left of the slot. The paper is exposed in the slot and the wear of the lug, which fits into the slot, comes on the thin edges of the metal tip which line the slot. The tip on this core is very likely to slip so that the slot in the tip moves away from the slot in the core proper. It is then a very difficult job to get it back into place—especially in the newspaper press room. The metal edges of the tip around the slot become jammed, and frequently when the returned core reaches the paper mill, it has to be cut down to smaller size, in order to get further use out of it.

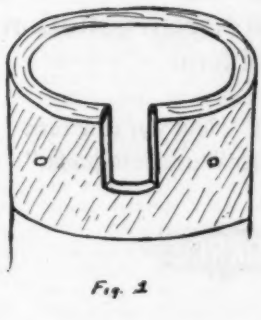


Fig. 1

Fig. 2

The tip shown in Fig. 2 avoids much of this trouble. The dotted lines around the slot show a piece of solid metal welded into the tip. In order to get this tip onto the core, the core is slotted along these dotted lines and the metal sets down into this slot. The tip cannot slip on the core. This then gives a solid metal lining to the slot, and there is nothing to jam or break. In addition to the fact that the tips never slip, these cores can be shipped and re-shipped innumerable times without replacement or repair.

How to cut down clay consumption

*The DORR SAVE-ALL will recover the fibre **and filler** from your white water flow.*

The Dorr Save-All, by the very nature of its design, appeals particularly to paper men who are making a sheet with a high clay-content. Dorrs recover from the white water not only the fibre, but the valuable filler which is so finely-divided that it is usually lost.

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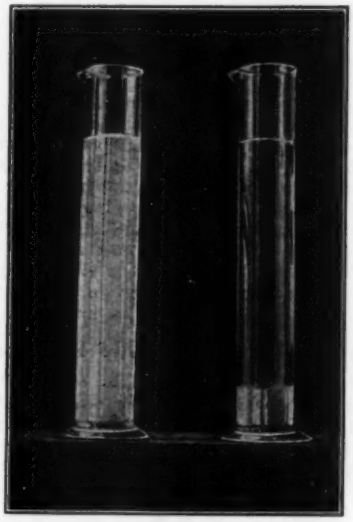

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INVESTIGATION TESTS DESIGN EQUIPMENT

Wear of Paper Machine Wires Through Grooving of Suction Box Covers[1]

V. BOUYER

AS SOON as re-inforced plain-weave wires made their appearance for use on high-speed machines, troubles were encountered which had hitherto been unknown: they consisted of premature breaking at the seam and of a tendency for the wire to slowly and permanently travel to one side of the machine.

The causes of these accidents were not easily discovered, but after a while it was noticed on taking off the wire that the covers or edges of the suction boxes had numerous small grooves parallel to the direction of travel of the wire, the spacing between the grooves being equal to that of the warp wires of the cloth.

Conditions Under Which Grooves Are Formed

These channels or grooves are due to the wearing action of the bends in the warp wires when the wire cloth operates under certain definite conditions.

The conditions required to cause this are as follows:

a—The warp wires are quite straight and parallel to the direction of travel of the wire cloth, and consequently they always pass over the same points of the suction box covers. The successive bends of a given warp wire rapidly pass over exactly the same point and have a saw-tooth effect, especially when the wire cloth is new and the bends project the full thickness of the warp wires.

b—The wire cloth is re-inforced, that is, it is woven with relatively heavy warp wire for the mesh of the cloth, and as a hard bronze is used, the suction box covers wear down more rapidly than the wire.

c—As the machine is operated at a high speed, a higher vacuum must be used at the suction boxes to obtain sufficiently rapid removal of the water from the sheet of paper. As a result the wire cloth is tightly drawn against the suction boxes as it passes over them at high speed, thus enhancing the wear of the covers by the warp wires. Moreover, the pressure with which the wire cloth is pressed against the suction boxes is still further increased by the fact that a heavy warp wire is used, and therefore the voids are smaller than those of the ordinary wire cloths of the same mesh.

d—The small amplitude, and at times complete absence, of shake used for certain grades of paper prevents all lateral displacement of the wire cloth at the suction boxes.

It is these four adverse factors which bring about the grooving or channeling of the suction box covers.

Formation of the Grooves

A wire cloth running under the conditions specified above will always wear the stationary parts over which it passes at the same points. The suction box covers are the parts which suffer most: whether the boxes are open (that is, with two or three small transverse bars) or covered, the wear never fails to take place. It naturally takes place much more rapidly on wooden than on brass suction box covers, but even in the latter case it is quite apparent.

It shows up in the form of channels which may be one and even two-tenths of a millimeter deep, with clean-cut edges and slightly inclined sides, the number of grooves in a given length being equal to the number of warp wires in the same length. These grooves gradually cut deeper and deeper, and starting with a perfectly smooth suction box, in ten days' time they can reach their maximum depth, which corresponds to the amount by which the warp wire projects from the plane of the wire cloth. At the same time the warp wires have also been worn to a somewhat irregular prismatic shape corresponding to that of the grooves.

Consequences of the Grooving

a—The first point to be noted is that the wire cloth runs absolutely straight, the warp wires passing always in the same grooves. This absence of the oscillation which takes place when the suction boxes are not grooved is sometimes accompanied by a very slow sidewise displacement of the wire cloth, always in the same direction, as though it were engaged in a helical groove with extremely small pitch. When this displacement becomes excessive and the guiding mechanism is brought into action, either automatically or by hand, the wire as a whole must be lifted out of the grooves and thrown to the other side of the machine, where it again starts to slowly creep sidewise.

b—When the suction box covers are not grooved, the bends of the warp wires wear down flat, giving the under side of the cloth a mirror-like appearance. The grooving of the suction box covers and the resultant prismatic wear of the warp wires give rise to a certain number of brilliant facets which destroy the mirror-like appearance. Under oblique illumination each of these facets shines separately, giving a characteristic granite-like appearance to the wire cloth, which is readily recognized at a mere glance on looking at the under side of the wire cloth while the machine is running and which is a sure indication that the suction box covers are grooved.

c—The last consequence, and the only truly serious one, is that the seam breaks prematurely.

In sewing the ends of the wire together the manufacturer endeavors to dispose the same threads in the spaces between the warp threads so as to avoid excessive thickness either on top, which would interfere with the thickness of the sheet at that point, or on the bottom, which would cause rapid wear of the threads on account of the heavy friction to which they would be subjected. When placed in this manner between the warp threads, the same threads are protected as much as possible from wear by the friction of the under side of the wire; and this is what actually takes place when the wire wears down normally over perfectly smooth surfaces.

But if instead of being perfectly smooth, the surface is grooved, the ridges between two adjacent grooves fit in the intervals between adjacent warp wires, and the seam wire, which was placed between the warp wires to protect it, wears down extremely rapidly,—the crest of the ridge cutting into it in much the same way as would a planing tool. The thread weakens very rapidly and breaks, the seam opens, and the wire cloth is useless.

The loss is all the greater that under these circumstances the life of the wire may be only half what it would normally have been but for the grooving. If, without taking the trouble to locate the cause of the short life of the wire and without carefully planing down the suction box covers, we place a new wire on the machine, the latter will begin to wear down considerably even on the first day, and the life of the second wire will be still further shortened by the time that was required to form the grooves in the suction box covers, so that it may be reduced to only half the life of the first wire.

The same thing may even happen with a third wire. As a matter of fact we know of a case where the lives of three consecutive wires were eighteen, twelve and six days, respectively. They had been put on a new table and used without planing the suction box covers each time, such a procedure having appeared unnecessary for new suction boxes after such a short period.

Here, then, is the explanation of a serious source of deterioration of paper machine wires, which is becoming increasingly frequent. In these cases the short life of the wire frequently is blamed on a poorly made seam, but the true cause is entirely different.

Precautions to be Taken Against Grooving

The danger of grooving, with the consequent premature destruction of the wire, imposes obligations on three different parties: The paper machine builder; The wire cloth manufacturer; The paper maker.

The Paper Machine Builder.—It is rather painful to have to admit that modifications in paper machine construction with a view to overcoming the danger of grooving were first investigated and patented in foreign countries. The discovery of the trouble caused by grooving followed the introduction of high-speed machines with high vacuum at the suction boxes, and there ensued active co-operation between the paper machine builders and the paper manufacturers to overcome this defect. From a consideration of the problem and of the operating data on the question, the paper machine

[1]Translated from *Le Papier* xxix, 1091-1096, October, 1926, by A. Papineau-Couture.

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builders of one foreign country arrived at the conclusion that in order to prevent the machine wire from always passing over the same spots on the suction box covers the most logical thing to do was to displace the boxes sidewise under the wire while the machine was running.

It should be noted that only a small displacement, one centimeter at the most is sufficient to prevent all channeling. Suction boxes were therefore constructed with a slow to and fro motion of small amplitude transversely of the line of travel of the paper. Other machine builders considered that this displacement interfered with the vacuum at the ends of the boxes, and they built their boxes to have a slow oscillating motion about a vertical axis passing through the center of the boxes.

As a matter of fact, the actual details of construction are of minor importance. The important point is that as soon as the trouble was discovered it was studied by those best qualified to overcome it, and they found and applied the proper solution.

The Wire Cloth Manufacturer.—The wire makers, for their part, are at the present time trying to do all they can for the wires which are used on machines with stationary suction boxes. This consists in re-inforcing the seam as much as possible so that in spite of the inevitable wear by the ridges the life of the wire will be increased.

The manufacturers are limited in this direction because they cannot use too heavy a thread which would give a projecting seam, mar the paper and interfere with the proper draining of the water. Nor can they take too hard a thread as it would be liable to break spontaneously. They must therefore rely on the co-operation of those who use the wires.

The Paper Maker.—When the wire is shaken in such a manner that the shake is still felt at the last suction box, there is no danger that the covers will be channeled. If, therefore, a machine makes different grades, some of which require the use of the shake while others do not, it is a wise precaution to start a new wire on a grade which requires a shake of large amplitude and to facilitate the movement of the wire over the suction boxes by giving a certain amount of side play to the last table rolls. If, when the wire is started up, it moves sidewise over the suction boxes, then the sharpness in the warp bends will wear down; and when the machine is subsequently changed over to a grade on which no shake is used, there will be much less danger of grooving into the edges of the suction box covers.

Above all, when putting a new wire on the machine it is essential to see that there is not the slightest trace of grooving in the suction box covers. At the start these grooves are not easily perceptible, but they can be detected by examining the surface under very oblique illumination or by passing the finger nail along the edge of the cover. The lip of the suction boxes is not the only place which must be watched in this way, for grooves also frequently start at the edges of the holes in the covers. When they are noticed, it is imperative to plane and polish the covers.

But even this is not sufficient, if grooving occurs frequently, it will be merely retarded, and not prevented. In such a case it is best to have a spare suction box and when the machine is stopped for some reason or other after having run for a couple of days, to remove the last suction box (the one nearest the couch roll) and put the spare one in its place. The box that has been taken out is then planed down and when the machine is again stopped it is put in the place of the second-last suction box, which is re-conditioned and put in the place of the next box. These replacements can be continued during the early life of the wire as long as the channeling is observed.

Of course these frequent changes of suction boxes are troublesome, but when compared with the more frequent shut-downs that would be necessary to change wire, the loss due to the shorter life of the wire, or the time required to sew up a seam, it will readily be seen that they constitute a very considerable saving. We can hardly lay too much stress on this simple procedure, which requires merely a spare suction box and a few minutes' extra work during the first few times the machine is stopped after a new wire has been put on.

We have already mentioned that high vacuum is the main cause of the channeling of the suction box covers. It follows that the wire should not be of finer mesh than is necessary for the kind of paper and the speed of the machine. The finer the mesh, the smaller the fiber loss in the white water; but on the other hand the higher the vacuum required to draw the water out of the sheet. Unless a proper balance is set up between these two factors the wire will wear out more rapidly than it should, and if, in addition, the wire passes straight over the suction boxes without any sidewise displacement, grooving must be expected with all its attendant troubles.

Superintendents and Printing Craftsmen Meet

Discuss Various Problems and Seek More Co-operation

AT A joint meeting of the Connecticut Valley Division of the Paper Mill Superintendents' Association and the Connecticut Valley Club of Printing House Craftsmen, held March 5, 1927, at the Nonotuck Hotel in Holyoke, Mass., printers and papermakers met to discuss various problems of mutual interest, and find ways and means for reaching greater co-operation between the two groups. With the mayor of the city, John F. Cronink, extending the official welcome to the guests, there followed many authorities and experts in the trade and printing field whose addresses contained many important ideas.

Some Faults in Papers.—Mr. Charles B. Porter, printing expert of the Springfield Fire and Marine Insurance Co., brought out some faults of papers, which prove to be detrimental to printing operations. In loft dried bond papers, pole mark and curling are the two foremost detrimental features, which occur frequently, causing considerable trouble to the printer. With the usual method of pole drying, the pole mark is found in the middle of the sheet and cannot be eradicated; the curling occurs mostly on the edges and affects the smooth operations of the automatic feeders. Pole-marked paper and curled paper is further difficult to fold, cut and jog. He urged the superintendents to try every means to overcome these bad features in bond papers.

While book papers, Mr. Porter continued, do not show pole marks—being machine dried, their shortcomings are found in stretching, shrinking and cracking. Mr. Porter, however, did not attribute these faults solely to the manufacture of paper. He emphasized that they develop very often through atmospheric conditions in the press room.

Press rooms have now, or contemplate installation of methods for the regulation of humidity in press rooms. Such methods keeps the moisture at comparatively uniform degrees and thus papers will not develop any of the bad features. Of course, there are a good many cases where the fault lies with the paper. Mr. Porter emphasized that only close co-operation between paper makers and printers would bring about a better understanding of their mutual problems and lead to elimination of many complaints.

Co-operation Between Papermakers and Printers.—Mr. Reynolds, assistant to the president of the American Writing Paper Co., spoke about several methods employed by his concern to bring about a better understanding between printers and papermakers. He also spoke of the many intricacies of papermaking and the need of co-operation within the organizations in the paper mills and between papermakers and consumers.

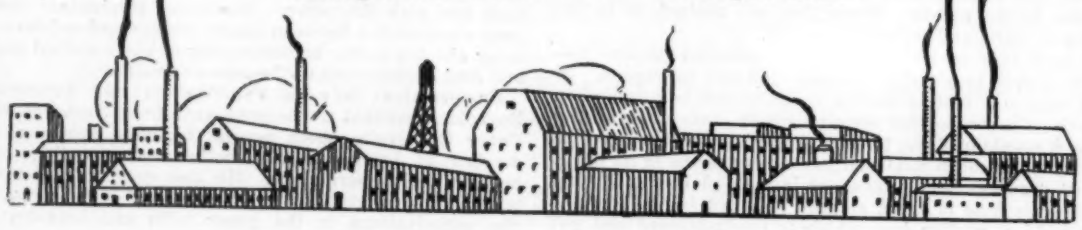
E. C. Tucker, production manager of the Chemical Paper Mfg. Co., of Holyoke, said his company has always endeavored to co-operate with printers and cited several instances where discussion of some little matters pertaining to faulty papers were instrumental in bringing about not only an elimination of those detrimental features, but also a better understanding to mutual benefit. Mr. Tucker also emphasized the importance of always having the correct degree of humidity in the press room. If the printer is in a position to always maintain relative humidity in his shop, papers will not get dry and shrink, or absorb more moisture and stretch. Owing to the very sensitive construction of automatic feeders for printing machinery, Mr. Tucker con-

What Mills Will Join This Group During 1927?

The impressive list of United States Mills that are economically heating and ventilating their machine rooms with Briner Economizers.

Algonquin Paper Co., Ogdensburg, N. Y.
American Writing Paper Co., Holyoke, Mass.
Brown Co., Berlin, N. H.
Central Paper Co., Muskegon, Mich.
Consolidated Water Power and Paper Co., Biron, Wis.
Consolidated Water Power and Paper Co., Wisconsin Rapids, Wis.
Continental Paper & Bag Mills Corp., Rumford, Me.
Crocker-Burbank Co., Fitchburg, Mass.
W. O. Davey & Son., Jersey City, N. J.
Defiance Paper Co., Niagara Falls, N. Y.
Degrasse Paper Co., Pyrites, N. Y.
Everett Pulp & Paper Co., Everett, Wash.
Falulah Paper Co., Fitchburg, Mass.
Finch Pruyn Co., Glenn Falls, N. Y.
Frazer Companies, Ltd., Madawaska, Me.
International Paper Co., Piercefield, N. Y.
International Paper Co., Livermore Falls, Me.
Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.
Kimberly-Clark Co., Niagara Falls, N. Y.
Kimberly-Clark Co., Neenah, Wis.
Kimberly-Clark Co., Niagara, Wis.
Lowe Paper Co., Ridgefield, N. J.
John A. Manning Paper Co., Troy, N. Y.
Marinette & Menominee Paper Co., Marinette, Wis.
Nekoosa-Edwards Paper Co., Nekoosa, Wis.
Nekoosa-Edwards Paper Co., Port Edwards, Wis.
National Paper Products Co., Carthage, N. Y.
Oxford Paper Co., Rumford, Me.
Riverside Fibre & Paper Co., Appleton, Wis.
St. Regis Paper Co., Deferiet, N. Y.
Saranac Pulp & Paper Co., Plattsburgh, N. Y.
Scott Paper Co., Chester, Pa.
Viscose Co., Nitro, W. Va.
Waldorf Paper Products Co., St. Paul, Minn.
Wausau Sulphate Fibre Co., Mosinee, Wis.
West Virginia Pulp & Paper Co., Mechanicsville, N. Y.

Including the even greater list of Canadian installations not mentioned here, surely there is ample testimony to the economy and efficiency of installing Briner Economizers. Investigate now!



J. O. ROSS ENGINEERING CORPORATION

549 W. Washington Blvd. CHICAGO
Main Office: 30 East 42nd Street NEW YORK
1117 Tacoma Ave. TACOMA, WASH.

ROSS ENGINEERING OF CANADA, LIMITED

New Birks Building, MONTREAL

tinued, the manufacturer should center his attention more than heretofore on the caliper of the paper. If the printer orders a paper which calipers 3 points, it should be delivered in that thickness and not ½ or 1 point or even thicker. The additional thickness may affect the operation of presses.

Forthcoming Graphic Exposition.—After Mr. Tucker, the first vice-president of the International Board of Printing House Craftsmen, Mr. A. E. Giegenback, of New York City, spoke. Mr. Giegenback is manager of the Fourth Educational Graphic Arts Exposition, to be held in Grand Central Palace, New York, September 5 to 17. His talk concluded the morning meeting, where about 150 were in attendance.

The Afternoon Session

At the afternoon meeting of the session Mr. Joseph Burgen, chemist with the American Writing Paper Co., read a very instructive letter on the subject of humidity and moisture contents of paper.

After Mr. Burgen's lecture a general discussion of problems, which had been submitted for the occasion by various printers, took place, and suggestions and remedies were offered. Those that entered the discussion were: A. V. Fitzgerald, of the Milwaukee Club of Craftsmen; Charles A. Tifft, secretary and treasurer of the Connecticut Valley Division of the American Paper and Pulp Mill Superintendents' Association; William B. Clements, general superintendent of the Fitchburg Paper Co.; President Hanson, of the Providence Club of Craftsmen; Mr. E. C. Tucker, of the Chemical Paper Co., and president of TAPPI; E. J. Cobb, president of the Connecticut Club of Craftsmen, and Joseph Burgen, of the American Writing Paper Co., besides many others.

The afternoon session closed, with an attendance of about 200 persons.

Banquet and Conclusion of Meeting

The attendance at the banquet greatly exceeded the expectations of the officers of the joint meeting. Covers were laid for four hundred and fifty persons. There was just one principal speaker of the evening, Mr. John J. Deviny, International President of Printing House Craftsmen and former Director of the Bureau of Engraving at Washington. Chairman John White, after welcoming the printers, papermakers and their guests very cordially and thanking the committee for the very efficient co-operative work in arranging for the joint meeting, introduced Mr. Deviny.

Mr. Deviny gave a brief outline of the Craftsmen movement and a description of the story of the tablet placed by the International Association in honor of the linotype machine that was used during the war to set up General Pershing's orders in France. A picture of the tablet was pasted in each souvenir program and the inscription on it read:

> "In honor of a linotype that served its country in the battlefields of France. There, upon a throbbing motor truck, 'mid shot and shell, this machine typed General Pershing's commands to America's victorious army. This tablet has been placed here by the International Association of Printing House Craftsmen, July, 1926."

Mr. Deviny then spoke about "How Money Is Made," and his lecture was both instructive and entertaining.

It was perhaps the first time that a body composed of printers and papermakers came together to discuss their various problems with a view to finding ways and means for better and more comprehensive co-operation. Much was accomplished during that meeting, and both parties no doubt will reap the benefit of better understanding and entertain closer business and personal relations hereafter.

Classes in Sulphite Pulping

The first and second classes in the manufacture of sulphite wood pulp, held at the Forest Products Laboratory, Madison, Wis., during February and March are presented in the accompanying illustrations.

Fifteen lectures were given to each group, and in connection with the demonstration cooks, the technique of the several tests necessary for the control of cooking and for determining yield and quality of pulp were taught by having the students themselves test the product of the cooks.

The students in the first class from left to right: Andy Weir, Wausau Paper Mills, Brokaw, Wis.; C. S. V. Hawkins, Price Bros. & Co., Ltd., Riverbend, Que., Can.; A. J. Winnige, Great Western Paper Co., Ladysmith, Wis.; C. D. Jentz, St. Maurice Valley Corp., Cape Madeleine, Que., Can.; R. J. Hackett, Spanish River Pulp & Paper Co., Sault Ste. Marie, Ont., Can.; Wm. E. Breitenbach, Marathon Paper Mills Co., Rothschild, Wis.; Albert G. Hinzke, Provincial Paper Mills, Ltd., Port Arthur, Ont., Can.; Jesse E. Hamilton, Combined Locks Paper Co., Combined Locks, Wis.; Harold A. Skinner, Marathon Paper Mills Co., Rothschild, Wis.; R. E. Cooper, Spanish River Pulp & Paper Co., Sault

February Class

Ste. Marie, Ont., Can.; A. S. Viger, Munising Paper Co., Munising, Mich.; F. H. Johnson, Jr., Cherry River Paper Co., Richwood, W. Va.; Hermenegildo Barrios, Government of Mexico; T. H. Beaune, Paraffine Co., Inc., Port Angeles, Wash.; Oscar Ericson, Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland; Karl Wilhelm Rosen, Scandinavian-American Foundation, and Ernest Harper, Bathurst Co., Bathurst, N. B., Can.

The second class in sulphite cooking is shown in the picture with members from left to right as follows: Paul Panzel, St. Maurice Valley Corp., Shawinigan Falls, Quebec;

March Class

J. E. Cummins, Australian Government; T. L. Dunbar, Stebbins Engineering & Mfg. Co., Watertown, N. Y.; M. E. Fayle, Penobscot Chemical Fibre Co., Great Works, Me.; L. Saether, Riordon Pulp Corp., Temiskaming, Quebec; E. Cole, Northern Paper Mills, Green Bay, Wis.; R. Steadman, Abitibi Power & Paper Co., Ltd., Montreal, Quebec; Mr. Barker, Parker Young Co., Lincoln, N. H.; J. W. Stevens, The Northwest Paper Co., Cloquet, Minn.; H. Haskins, Hoberg Paper & Fibre Co., Green Bay, Wis.; Wm. McFadden, Castanea Paper Co., Lock Haven, Pa.; Frank Relot, Nekoosa-Edwards Paper Co., Port Edwards, Wis.; E. H. Dadswell, Australian Government; Horace DuBois, Kimberly-Clark Co., Neenah, Wis., and C. H. Draper, Oxford Paper Co., New York City.

R. H. Beaumont Co., of Philadelphia, announce that they have taken over the business of the American Mfg. & Engineering Co., of Kalamazoo, Mich., and products formerly manufactured by the latter company, including the American slack line cableway excavator, will now be manufactured by the R. H. Beaumont Co. S. O. Nafziger, president of the American Mfg. & Engineering Co., will now be associated with R. H. Beaumont Co.

The Coe Manufacturing Co., makers of roller dryers and veneer machinery, announce the removal of their office in the Conway Bldg., Chicago, to 208 W. Washington St., Chicago, where H. R. Masters, assisted by Howard Curtiss, formerly of the B. F. Sturtevant Co., will be in charge.

The North Rod Mill

Designed Especially for Paper and Pulp Mill Work

Makes Your Screenings into Valuable Pulp
Does Better Work Than a Beater at One-fifth the Horse Power
Positive Screw Feed, Assuring Positive Quality. No Attendant

The North Water Filter

The cut at the left is 20,000,000 gallon outfit for Northern Paper Mills. We have one 100,000,000 gallon installation and over 1,000 smaller jobs.

THREE SIZES

Save-Alls **Stone Bed Plates**

See Page 347 in the 1926 Paper and Pulp Catalogue

GREEN BAY FOUNDRY AND MACHINE WORKS

GREEN BAY, WISCONSIN

BRITISH CORRESPONDENCE

Present Trade Conditions

A survey of the paper industry as a whole has revealed the fact that merchants are having a more difficult time than the mills. This state of affairs is accounted for to a great extent by the fact that most mills now deal direct on tonnage orders. Conditions are quite good in the newsprint section, and both home and overseas demands are very active. Both Australian and New Zealand demands in this section have shown signs of improvement, and in spite of Canadian competition it seems that we shall continue to hold the main bulk of the trade. This may be due to the fact that Canada has her hands full with demands from her own markets and from the States, for as fast as the Dominion mills extend their output, the consumption increases in like ratio. It appears, too, that Canada is not in the position to reciprocate with return purchases from Australia, while our imports from that country are sufficiently on the increase to encourage the Australian buyers to extend their purchases of newsprint and other papers.

Demands are fair in the woodfree mills, which include printing, imitation arts, boards, writings, cartridge papers, manilas, and other specialities, but the purchases are not equally divided, for some mills are very busy, others moderately busy, while several are short of orders. The increased price still in operation has been sufficient to give Continental papermakers an advantage, by the diversion of many inquiries in their direction. It seems that a return to normal prices is imperative if we are not to continue to lose business to foreign mills.

Costs of production, however, hardly justify the reduction of prices at present, although one or two mills have taken independent action and announced reductions in prices during the last few days.

In the esparto section, demands are fairly active and reasonably well distributed, and overseas business continues satisfactory. There is a distinct preference for esparto papers in the home markets, and it is said that paper makers in the north of the country owe much to the advertisement pages of the magazines. There is some foreign competition in coated papers, but it is not considered to be serious. This class is also in great demand at home, but the bulk of the body stuff is supplied by the esparto makers. Several British producers of art paper have recently put some good low-priced lines on the market.

As mentioned last month, the new regulations controlling foodstuff wrappings have necessitated a revision in the size and substance of the papers employed for the purpose. Most of the wrappings manufacturers have prepared standard schedules for the guidance of consumers. It is considered that bulk and weight will in many instances give way to strength, and that what the paper maker loses in tonnage will be made up in value. The new regulations will probably have the effect of causing an altogether more efficient type of wrapping paper to be produced.

The outlook is quite satisfactory in the wrapping mills, and this section is beginning to feel very tangible benefits as a result of the Safeguarding Act, restricting the importation of foreign wrappings, and there has been a very decided drop in the importation of packings and wrappings.

Reports of the Department of Overseas Trade on imports into India reveal the fact that of the total value of wrapping papers, Great Britain's share was one-seventh. Printings decreased to one-fifth, as against one-fourth in previous years, while of writing papers, the British proportion is one-half, as also for stationery.

Pulp from Potato Tops

A London trade publication has recently reported that experiments have been made in Leeds with something in the way of an extremely unconventional raw material for paper production, in the shape of potato tops. In fact, the man who originated the idea now claims that he has brought his experiment to a successful issue. Small experimental samples have been made, and, according to report, the pulp produced made a paper that was of good color, opaque, and of satisfactory strength.

An expert has pointed out that when tested in a mill on a sufficiently large scale to prove its economical value, this material shows results equal to those of the experimental tests. This should be good news for the papermaker, for it will provide him with an abundance of good raw material close at hand at a moderate price.

It is estimated that it needs three tons of potato tops to make one ton of pulp. A rough computation shows that there are 1,200,000 acres of land used in the cultivation of potatoes in this country, and the yield of tops from this would mean about 300,000 tons. With this all available for use, 100,000 tons of paper pulp could be produced.

Henry Frowde

The death of Mr. Henry Frowde of the Oxford University Press has necessitated the passing on to one more person of a carefully guarded secret—the process of manufacturing Oxford India paper. Ninety years ago there came into the possession of an Oxford graduate a small quantity of thin, tough, opaque paper, which he allowed to be used for printing a few copies of the Bible, one of which was presented to Queen Victoria, and the rest kept. The University Press tried hard to reproduce the paper or trace its origin, but the quest had long been abandoned as hopeless when Mr. Frowde began a new series of experiments at the Press paper mills. He at last hit on the correct process, and notified his success by the issue in August, 1875, of a new Oxford India paper edition of the Bible. It was agreed that the process should be shared by only three living persons at a time, and each workman engaged is sworn to secrecy, and permitted to become familiar only with his own stage of the manufacture.

British Industries Fair Successful

The British Industries Fair which was held consecutively at London and Birmingham, from February 21 to March 4, was a great success, both as regards the number of buyers that attended, and the amount of business done. At the London section alone there were 74,462 buyers, of whom 1,581 came from overseas.

In addition, 25,000 of the general public visited the London Fair, and 10,000 of the Birmingham section. It seems unfortunate that both the paper and stationery trades were very inadequately represented, for the exhibition affords a splendid opportunity for the introduction of British goods to foreign countries.

Inveresk Plans Another Merger

Still another merger is contemplated on the part of the Inveresk Paper Co., Ltd., Musselburgh, Scotland, for this tremendous organization has now offered to purchase the whole of the preference and ordinary shares of the Donside Paper Co., at 15s. per £1. preference share and 5s. per £1. ordinary share. The Donside Trust, which has the controlling interest in the Donside Paper Co., has decided to accept the offer. This will further extend the ramifications of the Inveresk Co., for the works of this newly acquired company are at Aberdeen.

Manager of Credit Organization to Retire

W. H. Pouch, president of the National Association of Credit Men, has announced that J. H. Tregoe, actively identified with the National Association since its inception in 1896, will retire from his position as executive manager on July 1. No steps have been taken as yet to appoint a successor.

Although Mr. Tregoe plans giving up his active work and making his permanent home in California, he will still act in an advisory capacity.

The association lauds his work, and the principles on which the nation's credit technique is based were worked out largely by Mr. Tregoe.

He was born in Baltimore 62 years ago, and for 37 years has been in credit work.

Pioneers in Paper Making

BELIEVING it will interest our friends to know something of the pioneer paper makers of America, brief notes of the earliest paper mills in different parts of the country will be recorded below from month to month.

The First Paper Mill of Western Pennsylvania

The first paper mill in Pennsylvania west of the Alleghenies was established on the Redstone River, Jefferson township in 1796 by Samuel Jackson and Jonathan Sharpless. Evidently it was considered quite an establishment at the time, for the mill building of three stories, about seventy-five by forty feet in size was described in a local paper as "very capacious."

One of the owners used to take the paper on his wagon and sell it in Pittsburgh. In an issue of the Pittsburg Gazette, which was printed on their paper, it was announced that writing paper of all kinds and qualities as well as printing paper would be made at the mill, and added "This is of great importance to the inhabitants of the country not only because it will be cheaper than that which is brought across the mountains, but it will keep a large sum of money in the country which is yearly sent out for the article."

Established 1842

Cheney Bigelow Wire Works

Experienced and Progressive

Fourdrinier and Cylinder Wires
Dandy Rolls and Cylinder Moulds
made and recovered

SPRINGFIELD, MASSACHUSETTS

RODNEY HUNT

Water Power Equipment

New Mill Type
Turbine Water Wheels

Accessory Equipment
including
Canal Gates
Hoists
Flumes
Trash Racks
Penstocks
Draft Tubes

Send for Catalogues

Rodney Hunt Machine Co.
38 Lake Street, Orange, Mass.

WASTE GATE HOISTS

RODNEY HUNT

The Experience of 50 Years is of Value to You

MICHIGAN NEWS

Bradford Mill Property Sold

The Bradford Paper Co., Kalamazoo, passed out of existence, when the Michigan Paper Co., of Plainwell, purchased the real estate, equipment, and good will of the concern for $255,843.29 and took immediate possession. The amount paid is sufficient to settle in full all claims of creditors and bondholders of the Bradford Paper Co. Stockholders, 132 of them, will receive according to estimates from 10 to 13 cents on the dollar for their individual holdings.

The sale was authorized at a special stockholders' meeting of the company in February, at which time a preliminary audit of the books disclosed impairment of capital stock to the amount of $177,872.17. Creditors were becoming uneasy and threatened to throw the concern into bankruptcy unless claims were paid. An attempt to re-finance and re-organize the company failed, and the decision to sell to the Michigan Paper Co. was quickly reached.

George W. Gilkey, secretary and general manager of the Michigan Paper Co., denied reports that the plant equipment is to be moved to Plainwell, by announcing that the coating mill will remain here and be operated on a full time basis. The new owners took possession March 1.

The Bradford Paper Co. was organized in the summer of 1924 and purchased the Libby, McNeill & Libby property in Fulford St., Kalamazoo. The founder was Clarence A. Bradford, who for seven years previous had been vice president and sales manager of the Rex Paper Co.

Bradford paper officials are required to turn over all correspondence, assets, formulas, accounts, and also furnish abstract of title to the real estate, names and addresses of all creditors and bond holders. The Michigan Paper Co. will in turn deposit a fund in a Kalamazoo bank to insure the carrying out of its end of the sales agreement.

Kalamazoo Trading Company to Expand

The Kalamazoo Trading Co. will, according to Albert F. Meisterheim, president and general manager of the concern, increase its sorting and packing facilities about fifty per cent, by reconstructing the building purchased from the Kalamazoo Spoke and Nipple Co. This structure has 8,000 square feet of floor space and is to be rebuilt and equipped with platforms, conveyors, scales and balers.

Changes in Personnel at Bryant

E. H. Gilman, who has been connected with the Bryant Paper Co., Bryant Division, for the past twenty years as superintendent, has been advanced to general superintendent.

Otto Fisher, for four years assistant superintendent at Bryant Division, has been transferred to the Superior Division as superintendent in charge.

Abe Vandeberg, who came to the Bryant company as superintendent in charge of the Superior Division, February 15, 1926, from the Lincoln Mills at Elkhart, Ind., has been transferred to the Bryant Division.

The new assistant at the Bryant Division is Paul Fortier, who comes to the Bryant paper organization from Groveton, N. H.

Torrence Talks to Employment Managers

C. E. Torrence, personnel director of the Bryant Paper Co., talked to the Employment Managers' Club Friday, April 1, on the methods of employment used by that corporation. He reviewed a case from the time the applicant for work is first interviewed until he is placed or rejected.

Torrence emphasized the need of care in not stealing help from other concerns, and also that the personnel department's policy is to aid foremen in the plant, and not to interfere with the latter's authority. He disclosed the fact that the Bryant foremen appreciate this attitude and are co-operating to the fullest extent.

"To be of real service, the personnel department must thoroughly sell itself to the mill," he stated.

Since January 1, 1927, the Bryant employment department has handled over 1,100 applications for work, indicating there is an abundance of labor available.

The Paper, Excelsior and Pad Co. has incorporated at Seattle for $20,000 to make paper excelsior, paper pads and reclaim paper of all kinds. E. R. Cupps, Jr., and A. M. Raun are the incorporators.

NEW ENGLAND NEWS

American Writing News

President S. L. Willson meant what he said when he announced that the American Writing Paper Co.'s properties would be concentrated in Holyoke, and it can be inferred from the last step in that process—the sale of the Agawam Division of the A. W. P. Co., at Mittineague, Mass.

This has been sold to the Strathmore Paper Co. The report of this sale has been heard for many months previously, but each time it was denied. It appears now that all machines, in both Number 1 and Number 2 mills, have been moved to Holyoke where the company will utilize them. The purchase of Strathmore at a price that was not divulged, involved the real estate, water rights, power plant, etc.

Agawam mill was closed down over a year ago. It was owned by B. D. Rising, prior to its sale to the American Writing Paper Co. Only two mills are to be eventually retained—one, the Windsor Locks division in Connecticut, manufacturers of high-grade boards, and the Plattner & Porter division at Unionville, Conn., where the famous Coupon bond is produced.

William McKay, superintendent of the Norman division of the American Writing Paper Co., has resigned to become connected with the International Paper Co., at Piercefield, N. Y. He is succeeded in Holyoke by George Reardon, assistant superintendent of the Albion division, who goes to the Norman division with a splendid record.

American Writing Paper Co., has announced the closing of its Gill division at Holyoke, due to the loss of the Government post card contract, which it had during the past year, and to which practically all the active machinery of the Gill division was devoted. The approximate 100 employees who lose employment through this will be given first choice in the other divisions.

As of April 1st, Dill & Collins Co., of Philadelphia, have closed their offices in the Park Square Bldg. in Boston. W. H. Cowles, who has been resident manager of this office for some years, has resigned from the service of the Philadelphia Company and becomes affiliated with the Fitchburg Paper Co., at Fitchburg, Mass., in the division of Sales. The publishing house business of Dill & Collins will be handled in New England henceforth by W. R. Ingersoll, who will cover the territory from the Philadelphia office.

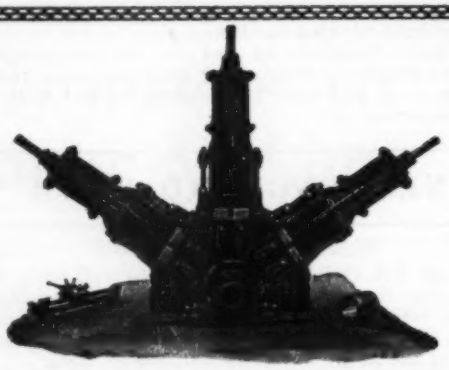
Paper Box Manufacturers Meet

The regular annual meeting of the New England division of the National Paper Box Manufacturers Association was held at the Hotel Kenmore, Boston, during March, and was attended by over 100 box makers and members of the allied trades, including a number of board mill representatives.

Mr. H. A. Dickie, of the Paper Board Industries Association, spoke at length on the new discount terms of the paper board industry—1%, 10 days—explaining the reasons for their adoption and inviting questions. This subject elicited very warm and earnest consideration of a proposition advanced by J. E. Perry of the Cambridge Paper Box Co., looking towards adoption of similar terms on sales to consumers. So far as could be learned, however, nothing was done in that direction. The new terms on board are now in general use, although some of the smaller New England mills are adhering to the 2%, 15 days, as of old.

Lewis Ingalls of Frye-Corbin Box Co., of Marlboro, Mass., succeeds E. E. Abrahams as chairman of the New England division.

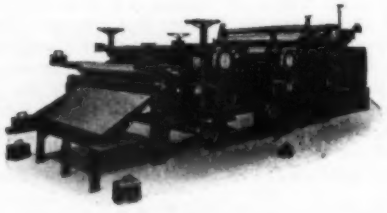
The Hammermill Course of Salesmanship for paper industry salesmen is being employed by one of the Boston dis-



Standard Wood Pulp Grinder

Built in Three Sizes

Taking wood 24", 30" or 32".
Bridge-trees—Are well proportioned.
Flanges—Made of steel, 40" diameter.
Hydraulic Cylinders—Copper lined, 12", 14" or 16" diameter. Valves are quick acting and leak proof.
Pillow Blocks—22" length of bearing.
Pockets—Very heavy, designed particularly for free discharge of pulp, and fitted with our RENEWERS.
Service—Continuous distinctive service is always assured.



Rogers and Special Wet Machines

The standard machine for producing high density laps continuously.

When dry stock is not desired, use it as a labor saver—one man can run it and handle a tremendous daily capacity.

The Single Press may be used for the same purpose.

A true Glens Falls product, our new

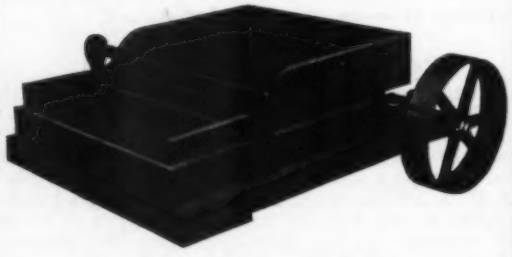
DEWATERER

(Patent pending)

Efficient Simple

This long sought machine will deliver chemical pulp from 15% to over 25%, as you may desire. It is entirely self contained, requiring no prethickener or vacuum pump. The flake form in which the stock is delivered is ideal for bleacher, beater or storage. Figures of our trial run are available at your request.

We have an attractive offer to make to you—you take no risk



Wells Undulating Knot and Sliver Screen

Gentle action assures high quality.
Simplicity means low upkeep and low selling price.
And you can SEE it all the time.

Ask Us for Quotation and Recent Purchasers

PULP AND PAPER MILL MACHINERY
GLENS FALLS MACHINE WORKS

GLENS FALLS, NEW YORK

See pages 344 to 345 in the 1928 Paper and Pulp Mill Catalogue

tributors for Hammermill Paper Co. This firm, Carter, Rice & Co. Corp., has 46 of its salesmen enrolled in the course, the tuition for which is borne by the Hammermill Paper Co. through the Business Training Institute of New York.

New Sales Methods for Famous Cover Paper

The District of Columbia Paper Mfg. Co. has adopted new sales methods for its Boston division. Its famous cover papers will now be handled by four Boston merchants, each of whom, while carrying certain lines, will be at liberty to sell any of the papers which can then be obtained from the stock of one of the other local merchants.

These merchants are: Arthur E. Ham & Sons, carrying three lines; Storrs & Bement Co. with two; John Carter & Co. with one; and Arnold Roberts & Co. with two lines, including the new paper, "Campan." New arrangements were perfected at a recent conference at the Hotel Statler, Boston, between representatives of the merchants, W. W. Langtry, sales manager, and Robert L. Finlay, advertising manager of the District of Columbia Paper Mfg. Co.

Wage Conference

Conference between the management of the Great Northern Paper Co. and representatives of the International Brotherhood of Paper Makers, as well as the Pulp & Sulphite union, took place at the Company's offices in Boston on March 30th.

No changes in basic wages were asked by the union, or suggested by the Company, and so far as can be learned, the working conditions as embodied in last year's agreement were renewed.

Great Northern is never troubled by strikes. A spokesman for the Company stated that the system of friendly conferences with the union representatives had been followed for ten years with marked success. It is expected that Messrs. Frank Barry and J. P. Burke, negotiating for the union, will sign similar agreements with the St. Croix Paper Co., Cushnoc Paper Co., Gilman Paper Co., Pejepscot Paper Co., and Waterfalls Paper Co.

Cost Body Meets

The regular meeting of the Connecticut Valley Cost Association of the American Paper & Pulp Association was held this month at the Hotel Nonotuck in Holyoke. It was addressed by Paul Hamway of New York, statistician of the Association, on the subject, "Statistics for Budget Purposes."

The meeting was unusually well attended, and was presided over by Chairman John H. Karges of C. H. Dexter & Sons of Windsor Locks, Conn. Mr. Hamway illustrated his talk by the use of graphs and charts indicating how the reflexes of depression on basic industries, such as agriculture, inevitably affect the automobile, steel and paper industry.

Forest Fire Experiment Station Planned

A forest fire experiment station is to be started this year in Millinocket or Ashland, Me., by the Northeastern Forest Experiment Station of the Federal Government, working in conjunction with the Maine Forest Service.

It will endeavor to determine the weather conditions making fire hazards greatest in different stands of timber. It is well known that the factors entering into fire hazards are different for different types of growth.

It will also be the purpose of the Station to discover the actual causes of forest fires in relation to their frequency. The various paper companies, particularly the Great Northern Paper Co., is understood to have offered their fullest cooperation.

Arthur W. Eaton, for many years head of the Eaton, Crane & Pike Co., paper converters of Pittsfield, Mass., has retired from the presidency, and is succeeded by his son, Col. William H. Eaton. The father has been elected chairman of the Board.

Adam Wilkinson, Labor Commissioner of the American Writing Paper Co., in an interesting address before the Springfield Building Trades Employers' Association, predicted the continuance of high wages in the paper industry and industry generally. He stated that reduction in production costs would be brought about by improved manufacturing methods, standardization, modern machinery and elimination of waste.

Tileston & Hollingsworth Co., paper manufacturers of Boston, have announced a modified form of the new 1,000 sheet count, adopted by the National Paper Trade Association. T. & H. sell their paper in the metropolitan Boston district direct, and through merchants in other parts of the country. Their new price list conforms to the new basis for count and weight, but they have not changed their method of pricing, no additional charge being assessed unless that amount is for less than 500 sheets.

Bird & Son, Inc., of East Walpole, Mass., paper board, box and roofing manufacturers, report the best year in their history for 1926. Earnings were equal to $10.30 per share on the 200,000 shares of no par common stock after dividends on $6,629,000 of various preferred shares. The prior preference issue of $1,629,000 was retired at the close of 1926 at 110. The Company is without debt, and has current assets of $6,945,000, of which $2,063,000 is cash.

The plant of the Bath Iron Works at Bath, Me., may be utilized by the International Paper Co., as an unloading depot for sulphur, clay, pulpwood, coal and other raw materials used by the I. P. mills in Maine, New Hampshire, and possibly for their Wilder, Vt., mill as well. There is no intention of using it for a machine shop or paper mill as was erroneously reported from New York.

Dennison Mfg. Co., paper converters of Framingham, Mass., have purchased the plant of the Northway Motors Corp. at West Natick, Mass., not far from their main plant at Framingham. The plant includes two buildings with 125,000 feet of floor space which will be used for storage purposes.

Logging operations on the Penobscot River resulted in the cut of 190 million board feet of pulpwood. The tremendous rise in the paper industry of Maine is well illustrated by the fact that only 1,500,000 board feet of lumber were cut. In 1900, the respective cuts of lumber and pulpwood were nearly reversed. Maine still yields as large an annual cut of timber as in the days when her virgin stands had not been scratched. Her rate of natural reforestation is said to be the highest of any state in the union.

Traffic Jottings

Traffic Manager Dowd of the Holyoke Traffic Bureau, representing the paper mills of that city, is strongly opposing the effort of the Boston & Maine R. R. to route New York shipments, including paper from Holyoke, through Greenfield, then to Troy and the New York Central in order to get a larger division of the haul. Past routing has been via Springfield and the B. & A. of New Haven. No change in rates is proposed, but the longer and more circuitous routing would inevitably breed delays, which in the present hand-to-mouth method of paper merchandising would be decidedly inconvenient to mills and consignees. The proposal was advanced 15 years ago and successfully opposed at that time.

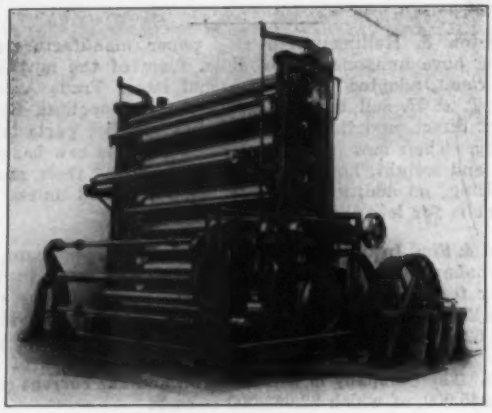
Through efforts of the New England Paper and Pulp Traffic Association, the rate on waste paper from Boston to Wachusett (Crocker-Burbank Co.), has been reduced from 11½c to 9½c per 100 pounds on imported material or on waste from the Pacific Coast via the Panama Canal. This offsets a switching charge on waste paper unloaded at Boston & Albany piers in East Boston.

C. L. Whittemore, traffic manager of the New England Paper & Pulp Traffic Association, appeared for cross-examination before the I. C. C. at Washington recently in their petition for lower rates on fuel oil to Claremont, N. H.

Maine Mills Operating at Capacity

Maine mills, with hardly an exception, show splendid operating conditions.

Great Northern Paper Co., could continue at capacity on the basis of present orders through the middle of 1929. Oxford Paper Co., at Rumford, Me., is operating to capacity, and is 30 per cent behind on certain types of papers. The



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For over thirty years Norwood's engineers have been serving the paper trade. Norwood dependableness is a known fact—and if you are in the market for calenders, platers, dusters, brushing engines or water filters, it will pay you to get Norwood's specifications and prices.

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Spring freshets will fill your water supply with dirt and debris. Summer's low water periods will bring a lot more pollution. Will you be prepared?

If your plant isn't properly and adequately equipped with Norwood Water Filters—if you haven't secured full information about what these efficient filters will do for you by helping to keep your plant in continuous operation, cutting down expenses and decreasing the amount of "seconds"—Now is the time to take action.

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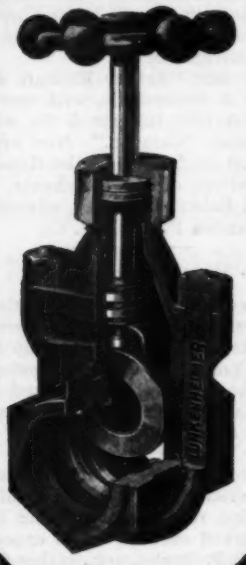
FILTERS, SUPER CALENDERS, GLASSINE CALENDERS, PLATERS, DUSTERS, BRUSHING ENGINES

FOR STEAM, OIL OR WATER SERVICE



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The steel clip surrounding the body rigidly secures the bonnet, lends strength to the body, and facilitates quick disassembling for inspection and cleaning.

The disc is double seated, and is tapered to a narrow point, making the valve particularly adaptable for handling heavily impregnated fluids.

"Clip" Valves are also procurable with lever for Quick Operating purposes, and in the All-Iron Pattern for handling solutions which attack bronze but not iron.

Lunkenheimer Distributors, located in all industrial centers, carry complete stocks and will fill your requirements promptly.

The complete line of Lunkenheimer "Clip" Valves are illustrated and described in Booklet F-505. A copy will be sent upon request without obligation.

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demands on pulp from the Rumford mills have prevented the company with supplying its Ohio mills with sufficient quantities of pulp. It is stated that the Ohio plant will operate at capacity when its pulp supply is adequate.

Hollingsworth & Whitney Co., and Eastern Mfg. Co., are operating all pulp mills at capacity, the latter having built up an excellent trade with rayon mills on bleached sulphite, including a very fair export business. Brown Co. is operating to capacity in all departments. Its Alpha mill, with enlarged production, is sold up for months ahead.

Holyoke Central Labor Union has ordered an investigation of reports that several paper mills in that city are violating the one day off in seven law.

OHIO NEWS

Improvements in Miami Valley

Paper mill expansion in the Miami Valley of Ohio proceeds with clock-like regularity.

Among the concerns which are broadening their activities by making additions and improvements are the Paul A. Sorg Paper Co., Middletown; The Cheney Pulp and Paper Co., Franklin; the Crystal Tissue Mills at Amanda, and others.

The Paul A. Sorg Co. has definitely decided to go ahead with its mill improvement which will require an outlay of $1,000,000 or more. The project includes a one-story, steam operated power plant for mill service, and according to Frank Smith, president of the company, the most modern equipment will be placed in the plant. The plans for the improvements have been drawn by Warren D. Spengler, Cleveland engineer of note. The plans have been prepared and submitted for some time, but were held in abeyance. Now with prospects for continued good business, the company will proceed with the building.

An expenditure of $1,000,000 or more is planned in the immediate vicinity of Middletown. At Amanda, the Crystal Tissue Co. is planning the installation of new machines to be added to the present equipment, or such changes that shall increase the output by improving the present machines.

The Cheney Pulp and Paper Co., at Franklin, have caught the spirit which resulted in so many mill changes in that town. Seventeen miles south of Dayton, it has made many improvements at heavy expense, including the laying of concrete floors, and equipment of the plant with electric motors. Power for these motors is being received from the Union Gas and Electric Co., Cincinnati.

Important changes are being made at the Oxford Miami Paper plant in West Carrollton, by Hugh J. Chisholm, the new owner of the mills. The addition, a bleaching plant, now under construction, is located south of the present mills and will provide facilities not heretofore enjoyed by the company. The mills were established by the Friend family, who played so important a part in the paper progress of Ohio and the West.

Dams Save High Water Damage

The Miami Valley undoubtedly escaped serious damage from high water the latter part of March by the successful operation of the Miami District detention dams which have been constructed in various sections of the valley to hold back the volume of water until it could be released under favorable conditions.

This project, which cost about $35,000,000, was devised after the disastrous flood of 1913, and seems to have forever solved the problem of safety. When it is considered that at Dayton alone the loss was about $200,000,000 during the big floods, taxpayers have not complained about the Miami Dam Tax.

The Maxwell Paper Co's mills, newly re-equipped at Franklin, were compelled to close for a brief time owing to the high water. Not that the water entered the mills, but the extensive water power, which the company recently acquired from the American Writing Paper Co., was temporarily put out of commission. This water power extends north of Franklin to the State Dam near the Miami Valley Chautauqua grounds. The suspension was brief, however, and the new mills are in full and successful operation. The old Harding Paper Mill at Franklin is hardly recognizable by members of the trade, as all new machinery and modern equipment was placed in the plant. Additions and improvements on the outside of the mill have made this first mill established west of the Alleghenies by the famous Harding family, a new landmark in the Miami Valley.

J. F. McCall, night superintendent of the Maxwell Paper Co., died at Franklin last month soon after his arrival from Niagara Falls, N. Y. Members of his family arrived in the Ohio town just before he died.

Increased production is expected at the Auglaize Box Board plant at St. Marys, as a result of the discarding of the obsolete parts, and the substitution of new and modern equipment in the plant.

Canal Again Debated

The matter of the canal in the southern part of the Miami Valley is causing considerable debate, and after the representatives had visited Columbus recently, the Waterways Committee was unable to reach an agreement, even after the session. Arrangements were made for a special night session in the near future.

The compromise, as understood, embraces the diversion of the canal within a flume through Middletown, thus keeping it intact in Hamilton. It is stated this would do away with the so-called nuisance in Middletown and would preserve the waterway for barge purposes, if needed.

There is an element, partially backed by paper manufacturers, that contends a barge canal will form the solution for cheaper transportation rates, while traffic will be greatly facilitated by its construction. Cincinnati's cheap freight rates are attributed largely to the fact that it receives much of its commodities by water.

Bond Water Mark Affects Outcome of Will

Proof that the paper upon which a will purporting to be the last testament of Edwin B. Jennings, wealthy Chicago bachelor-recluse, could not have been made until two years and four months after the date the will bore, offered by E. A. Oberweiser of Stevens Point, is believed to have saved the $6,000,000 estate from a forged instrument.

The purported will was presented in Cook county probate court, Chicago, by Edward C. Koester, Michigan convict on parole. Attorneys for eight second cousins, heirs at law, opposed. They conferred with Mr. Oberweiser, secretary-treasurer of the Whiting-Plover Paper Company, Stevens Point.

By tracing changes made in the watermark of the paper, Artesian Bond, Mr. Oberweiser had proof in his possession, and offered it in the court, that the paper upon which the will presented by Koester was written bore a watermark such as the company has used since 1921. In 1918, when the will was dated, the watermark was quite different, and it had been changed previously, since the paper was first manufactured in 1914 by the local company.

After the firm of distinguished attorneys representing Koester had investigated Mr. Oberweiser's testimony, they asked permission of the court to withdraw from the case. This request was granted.

H. Puttaert, of 526 Bay St., San Francisco, Cal., has patented a process for making mechanical wood pulp which is said to use one-fifth the power and one-tenth the water required to produce a ton of pulp with the grinding process. This new process is said to produce a better pulp with no screening or slivers, and almost any wood or waste from lumber mills can be used, thereby reducing the cost of producing mechanical wood pulp.

The Pacific Pulp Timber Co. has been incorporated at South Bend, Wash., for $75,000 with S. E. Earles and A. W. Hammond as the incorporators.

The Taylor Stoker

Reduces Labor Costs

In a large central station where fifty boilers have a total heating surface of more than 450,000 sq. ft., it has been found that one man can manage five of these big boilers with ease.

This is typical of the way labor costs are reduced by the use of the Taylor Stoker, both in large central stations and in industrial power plants of moderate size. In either case, "the Taylor Stoker way" is the economical way to burn coal.

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PACIFIC COAST NEWS

Financial Progress of New Astoria Mill

The Northwestern Pulp and Paper Co., which is developing a large sulphite pulp plant on Young's Bay at Astoria, Oregon, has disposed of its first mortgage 6½ per cent bonds to the amount of $1,000,000 to an eastern syndicate which is directly interested in the manufacturing project, according to a recent announcement made by the officers of the company.

A sale of 5,000 shares at $100 a share of cumulative preferred 7½ per cent stock is being conducted from their financial offices at 215 Porter Building, in Portland, Oregon. One share of common is given as a bonus with each share of preferred stock. It is believed that the earnings will be sufficient to pay $1 a share dividends on the common.

The funds to be derived from this sale of stock is to be used almost entirely for working capital, those in charge of the sale have announced. With the sale of the 6½ per cent bonds, the major share of the financing of the mill was closed, and officers are of the opinion that none of these bonds will be up for sale in the near future, since the syndicate intends holding them for an investment. The purpose of the bond issue is for the financing of the construction of paper mills, utility mills and by-product plants.

Options have been secured by the company on all Young's River waterfront property from the Roosevelt highway bridge east to Williamsport, a distance of about one mile, it was recently announced. For some time the company has held the western portion of this waterfront, under grant from the city, and the additional options have been secured because of enlarged construction plans.

Directors in the company are: Charles Randlett Flint, president, Flint & Co., New York; G. Clyde Fulton, attorney-at-law; Frank Patton, banker and capitalist; A. V. Allen, lumberman, all of Astoria; B. T. McBain, consulting paper and pulp specialist; W. M. McPhail, civil engineer; Amedee M. Smith, banker and realtor; Robert T. Jacob, tax counsellor, and Charles W. Miller, assistant treasurer of the Oregon, Washington Railroad and Navigation Co., all of Portland; C. W. King, executive; Myron W. Robinson, director American Manufacturers' Export Association and ex-president Crex Carpet Co.; Archimedes J. James, capitalist; Daniel Mungal, attorney, Commercial Casualty Insurance Co., and R. C. Wechsler, vice-president Scutah Co., manufacturers of waterproof paper, all of New York City, and S. C. Maltby, magnesite mining and calcimining, San Francisco, Cal.

C. R. Flint, merchant and banker, president of the Northwestern Pulp and Paper Co., is a prominent person in both business and diplomatic circles, and has been active in one phase or another since 1871, when he was a partner in the firm of Gilchrist, Flint & Co. The following year he was a partner in the firm of W. R. Grace & Co., with offices in San Francisco, Chile and Peru.

During the years from 1877 to 1879 he was Chilean consul in New York and later he was consul-general of Nicaragua and Costa Rica to the United States. In the year 1885 he joined the firm of Flint & Co., ship owners, lumber and general merchandise, which had been founded by his father and uncle in 1837. He has been an active organizer since his early business career.

He has acted as organizer in the formation of so many well known national concerns, that he has been given the name of "Father of Trusts." He is also chairman of the American Commission for Encouragement of Democratic Government in Russia, and his past experience in several consular positions fits him for his position admirably.

Work Progressing at Spaulding Mill

Construction is well under way at the Spaulding Pulp and Paper Co., site in Newberg, Oregon, where the new mill is being erected, and it is believed that it will be completed and in operation by August 1.

The office building, a frame structure, is finished and is being occupied already. The triple tower of concrete, measuring 100 feet in height, is the first structure that catches the eye of anyone approaching the plant. The acid towers will have a lining of vitrfied brick and elevator equipment will be placed in one of them.

The wood room, constructed entirely of wood and measuring 35x40x125 feet, which will house the machinery for reducing wood to chips, is practically completed. Construction of the boiler house is to begin immediately, now that the foundation has been finished. The foundation of the digester building, which will have the same measurements as the wood room, is about completed. Excavation has been started on the wet room, measuring 50x100 feet. These buildings are being erected of iron and steel with concrete. Sixty men are now employed in actual construction work at the plant. Contracts have been let for $265,000 worth of machinery.

Hawley Paper Plans Improvements

According to a recent statement from Blythe, Witter & Co., investment bankers, the net earnings of the Hawley Pulp and Paper Co., located at Oregon City, Oregon, in the last six months of 1926 amounted to $285,000 after depreciation and federal income taxes had been deducted. The Hawley Pulp and Paper Co., a Delaware corporation, took over the assets of the old company of the same name on July 1, 1926, which accounts for the six months statement.

W. P. Hawley, president of the concern, announced recently that in accord with a thorough engineering survey of the plants by V. D. Simons, paper mill engineer of Chicago, improvements will be made this year. It is the plan of the company to increase the daily output from 120 to 150 tons of finished paper. Funds for financing the necessary construction and addition of equipment are at hand, the company having invested in government bonds to the extent of $500,057 from proceeds of the initial financing to be used for this purpose.

Contracts for the newsprint output of the plants have been signed for 1927 on the same basis as that of 1926, the Graham Paper Co., of St. Louis, being the sole selling agent.

Developments at Rainier

The Rainier Pulp and Paper Co., at Shelton, Wash., has been granted the right by the state supervisor of hydraulics to use 30 cubic second feet of water from Goldsborough Creek for manufacturing purposes, and to construct a dam, pipe line and pump at a cost of about $25,000.

The dam now being built by 450 men is expected to be ready for operation about April 20. Only the chipping plant remains to be erected, and all machinery has been received. D. B. Davies will have charge of pulp making. Davies comes from Neenah, Wis.

The hydro-electric plant being constructed for the Washington Pulp and Paper Corp., of Port Angeles, Wash., is expected to be completed May 1. Erection of the 210-foot dam and the plant was made necessary by expansion of the mill. Production of newsprint will jump from 140 tons a shift to 240. In order to accomplish the work, a five-mile road, part through solid rock, has to be built, and workmen noticed wild elk grazing upon the construction work of the dam.

Columbia River Mill Expansion

The Columbia River Paper Mills launched a bond issue the last of March for the purpose of adding to the equipment, retiring indebtedness and providing additional working capital. They are offering $1,000,000 of the company's first closed mortgage 6 per cent serial gold bonds, through Bond & Goodwin & Tucker, Inc., and Dean, Witter & Co., at 100 and accrued interest, to yield 6 per cent.

The issue is secured by a closed first mortgage on all fixed assets of the company, consisting of pulp, sulphite and paper mills and a sawmill located at Vancouver, Washington. As appraised by the American Appraisal Co., the depreciated sound value of these assets will amount to $2,360,891 or more than two and one-fourth times the bonded indebtedness.

The Columbia River Paper Mills, incorporated under the laws of the state of Washington in 1923, is owned by the Columbia River Paper Co., of Portland, Oregon, which also owns the capital stock of the California-Oregon Paper Mills

Would you come to Richmond for A YEAR'S SALARY?

It may be worth more than that if you come to Richmond, May 26, 27, 28, 1927

MAN alive! You bet your life you would—The 8th annual convention of the American Pulp and Paper Mill Superintendents Association will present an educational and practical program that is certainly worth a year's salary to any man connected with the paper industry—It's brimful of actual facts, it's crammed with papers and round table discussions of practical problems, it's a real program for paper men, by paper men.

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Richmond is a town where the busy bustle of a progressive city is tempered by the soothing spirit of Southern hospitality; a town where there is still time for actual expression of the old-time traits of courtesy and friendliness: in short, a real Southern town, set amidst scenery of unusual beauty and surrounded by landmarks of historic interest.

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- Forestry and the Paper Industry
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- Recent Developments of the Rodmill
- The Ranarex CO_2 Recorder
- Youngchild Wire Cleaner
- Laughlin Centrifugal Washer
- Waterbury Hydraulic Speed Control
- K-B Process of Waterproofing
- Harvey-Lewellyn Control

Fun

- The Humorist of the South *Dr. D. W. Daniel*
- "A Night in Old Virginia"
- "Seeing Historic Richmond" *Dr. Douglas L. Freeman*
- Sir Charles Bartholomew
- Broadway Stunts
- Dancing

of Los Angeles and over 95 per cent of the common stock of the Oregon Pulp and Paper Co., at Salem, Oregon.

The plant is engaged in the manufacture of newsprint and a complete line of wrapping and fruit wrapping papers.

On a recent trip in the East, Fred W. Leadbetter, president of the Columbia River Paper Mills Co., purchased the 8,800-ton steamer Ipswich for the company, which will be used in Atlantic and Pacific coast service. It can easily handle 4,500,000 feet of lumber, and will have, in addition, space available for other commodities. It is expected to berth at Vancouver, Washington, about May 1, for a load of lumber, and was supposed to have left Boston late in March.

The paper company has been undergoing some difficulty in securing sufficient tonnage to handle the output of its sawmill department and the Munson-Comstock line will continue to operate the newly acquired boat with the stipulation that the company will handle not less than 2,000,000 feet of lumber per month.

WISCONSIN NEWS

Rapid Progress at New Nicolet Mill

Remodeling of the paper mill at De Pere, purchased from the American Writing Paper Co., by the newly organized Nicolet Paper Co., is going on rapidly in preparation for opening of the plant for full-time operation by mid-summer.

About 100 workmen are being employed at overhauling the mill, installing new equipment, and putting in cement floors throughout. The plant is the largest of the American Writing Paper Co., and includes more than 250,000 square feet of floor space.

Henry C. Hanke, formerly manager of the Rhinelander Paper Co., Rhinelander, is general manager and vice-president of the new company; W. C. Wing, Neenah, president of the Fox River Paper Co., Appleton, is the Company's president; E. J. Dempsey, Oshkosh, is secretary; and H. K. Babcock, Neenah, is treasurer. The company is capitalized at $750,000.

An explosion in a sulphur burning room at the Kimberly Mill of the Kimberly-Clark Co., recently caused damages amounting to approximately $50,000. Fortunately, one man only was injured. The damage was principally to the machine shop, laboratory, and drafting rooms. Fires broke out at several points, but were easily extinguished. Operation of the plant was suspended for only about a half day.

Lawrence E. Nash has resigned as vice-president and sales manager of the Nekoosa-Edwards Paper Co., of Nekoosa and Port Edwards, where he has been with the concern since the year of its organization for nineteen years.

Production of strawboard has begun in the plant of the Menasha Paper Mills Co., which was purchased a few months ago from the now defunct Island Paper Co., of Menasha. The plant has been completely overhauled.

The American Tablet and Stationery Co., of Green Bay, has been absorbed by the Western Stationery and Tablet in a merger of several smaller companies effected a short time ago.

A patent on a paper coating machine has been issued by the United States Government to Herman Weber, of Appleton. He is a mechanical engineer at the Thilmany Pulp and Paper Co., Appleton. A one-half interest in the invention has been assigned to the American Lakes Paper Co., of Chicago.

A program of extending the courses in paper and pulp instruction, such as were inaugurated in the Appleton Vocational School, to other schools outside the Fox River Valley, was discussed at a meeting of vocational school directors in Appleton recently. A complete survey of conditions in these paper mill cities will be made.

Added protection for paper mills from high water on the Fox River will be afforded through a river improvement project which is to be undertaken by the government this year. A retaining wall will be erected at Kaukauna to prevent flooding there.

According to the final account given in the estate of William M. Gilbert, Menasha paper manufacturer, who died last year, his son, Albert G., becomes one of the principal owners of the Gilbert Paper Co., Menasha. Mr. Gilbert's estate was about $300,000.

On account of a fire that destroyed a warehouse of the Dever Bros. Paper Co., Milwaukee, that concern has sold its retail business to the American Paper Co., and hereafter will specialize in distributing for industrial and wholesale concerns.

As a result of the bursting of a pipe in the sulphite room of the Consolidated Water Power and Paper Co., Wisconsin Rapids, Leonard Griffith, a workman, suffered severe burns which proved fatal. Ten tons of sulphite escaped through the broken pipe.

A battle is being waged in both the Wisconsin and Florida courts over the estate of the late Meyer Burstein, Neenah paper stock jobber and envelope manufacturer. His estate is estimated at $400,000. Both states are trying to collect inheritance taxes. Efforts are being made to establish the legal residence of Mr. Burstein at the time of his death.

According to a report of the Tomahawk Kraft Paper Co., Tomahawk, the 1926 sales of the company totaled $1,617,318, an increase of nearly $400,000 over the previous year. The company recently purchased a plant of Tomahawk from the Montgomery Ward & Co., of Chicago. Manufacture of sulphate pulp and paper was undertaken in 1924.

An estate of approximately $275,000 was left by Hiram Freeman, late treasurer and former general manager of the Fox River Paper Co., Appleton. Of this amount, $150,000 was invested in paper mill stock or bonds. A considerable share of it was invested in the Consolidated Water Power and Paper Co. of Wisconsin Rapids. Other holdings were in the Bastrop Pulp and Paper Co., Little Rapids Pulp and Paper Co., International Paper Co., Minnesota and Ontario Paper Co., and Fox River Paper Co. The bulk of the estate was left to his widow.

Foremen Safety School Concluded

Sessions of the Foremen's Safety School conducted in Appleton this past winter, were concluded on the last Wednesday of March with a banquet to about 200 employees of Appleton and Kimberly who have a record of service of more than twenty-five years in their place of employment. Most of the men at the banquet were employes of paper mills. Employes of long service were also honored.

At the same time a banquet was served the foremen who attended the sessions of the safety school. Governor Fred R. Zimmerman of Wisconsin was the principal speaker. He complimented the men highly on their long years of service, and the foremen for their efforts in the interest of safety were highly praised. There were four hundred persons present at the joint meeting.

At the meeting a week previous, W. J. Peacock, of Northern Paper Mills, Green Bay, spoke to the foremen in Appleton on "Cost of Carelessness to the Workers, Foremen and the Plant." Similar meetings were closed in the Safety School at Green Bay last week. E. W. Young of the Kimberly-Clark Co., Kimberly, was one of the speakers at Green Bay. He told of the safety work being done by his company.

International's Maine and Arkansas Projects

Although there has been some statements to the effect that International was to re-open their pulp mill at Van Buren, Maine, there has as yet been no official statement to this effect, and so far as known, there has been no definite decision as to this reopening.

Work, however, has been started on the contemplated mill at Camden, Arkansas, where there will be a two-machine kraft mill.

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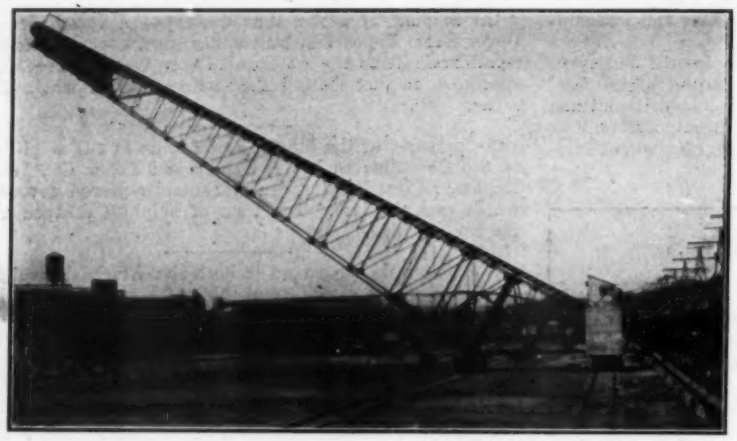
DESIGNERS AND MANUFACTURERS OF
CONVEYING AND ELEVATING EQUIPMENT OF EVERY DESCRIPTION



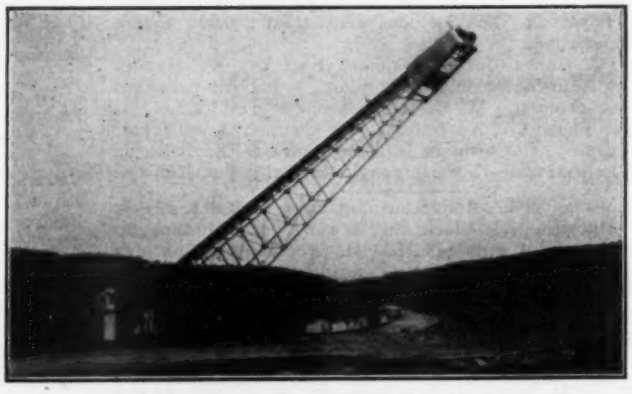
PULPWOOD STACKER designed and built by us for The Spanish River Pulp and Paper Mills, Ltd., at Espanola, Ont.

We also furnished the cable conveyors, including improved type of gap wheels and buttons, cable and drives.

This stacker has a capacity of 100 cords per hour and stacks to 100 feet height. The power consumed is approximately 50 H. P.

The complete driving arrangement is at the upper or head end, with puller at center of track resistance on lower cords of trusses.

This is one of four stackers ordered from us incorporating the HEAD END DRIVE and eliminating entirely the troublesome and power-consuming features of the old bottom drive with its idler sprockets and swinging take-up.



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Quality of malleable iron,
Strength,
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Analysis of steel in pins and side bars,
Fit of pins,
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Canadian Section

Newfoundland Made Three Times Larger

By one of the most important decisions ever handed down by the Privy Council, Canada loses a rich prize, and Newfoundland annexes an area aggregating 111,300 square miles. The stake includes some 60,000 square miles of spruce forest valued at $250,000,000 and a cataract known as Grand Falls, on the Hamilton River, compared with which mighty Niagara takes second place; it is estimated that the available water power in the affected area runs into several million horse power, or half the total available in the whole Province of Quebec.

It is possible, however, that Quebec may yet have possession of Grand Falls, as the text of the judgment does not define what constitutes the water head of the Romaine River. Further negotiations may be required, and it is not impossible that this point may be referred back again to the Privy Council.

Government Studies Re-Seeding

The tremendous drain on Canadian forests brought about by the phenomenal development of the news print industry makes it imperative that efficient means be taken to perpetuate our forest resources, without which the mills could not operate. This has been understood by the Government, and the annual report of the National Research Council for 1925-26, which was recently tabled in the House of Commons by the Minister of Trade and Commerce, contains a chapter dealing with work carried out by the council in co-operation with the Forestry Branch of the Federal Department of the Interior and with the Department of Lands and Mines of New Brunswick.

Comparative studies of seeding by broadcasting and by the seed-plot method were carried out, this being the third year during which the investigation was continued. In view of the fact that trees normally take from 50 to 100 years to grow to merchantable size, it is obvious that no definite conclusions can be drawn as to the success of the work; but regular examinations will be made of the seeded areas, until definite conclusions can be drawn one way or another.

Owing to the present slight excess in production over demand, which will probably be still further increased by considerable new tonnage due to come from new mills in the near future, it is reported that an effort will be made to avoid price-cutting by the creation of a large concern which will sell about 50 per cent of the Canadian output, and that some of the biggest newsprint producers in Canada are engaged in working out negotiations leading to the consummation of such a plan. No confirmation of this rumor has been made as yet.

Progress on Research Laboratories

Things are beginning to move in connection with the cellulose research laboratory building provided for by the action of the Canadian Pulp and Paper Association at its annual meeting in January. The Canadian Pulp and Paper Research Corp. has been incorporated, and this body will be the holding company responsible for the sale of the research building bonds, the building of the cellulose research institute, and generally for its management until finally turned over to McGill University on maturity of the last bonds twenty years from now. Those named as directors are Carl Riordon, L. R. Wilson, C. Howard Smith, George M. McKee and Edward Beck for the association, and J. W. Ross for McGill University. The Montreal Trust Co. will act as fiduciary agent.

The architects, Nobbs & Hyde, who drew up the tentative plans, will proceed with the final plans as soon as the Research Section of the Association, the Department of Cellulose and Industrial Chemistry of the University and the Pulp and Paper Division of the Forest Products Laboratories have agreed on the essential requirements of the building which work is already well advanced.

Everything points to the probability of breaking ground this month, and it is suggested that the summer meeting of the Technical Section might be held in Montreal, and that the laying of the corner stone be made the feature event. It is understood that the usual mill visits connected with the summer meeting would be arranged for at Three Rivers, where recent developments, particularly at the Wayagamack, St. Lawrence and International mills would make such a visit exceedingly interesting.

J. A. Nordstrom, who is becoming well known among pulp and paper men through the introduction of the Nordstrom wood refuse drier and other apparatus, has been visiting pulp and paper mills in Canada.

The Harland Engineering Co. reports a lot of business on hand. It would appear that most of the new machines in Canada are to be driven by Harland drives. The new machines of the Manitoba Paper Co., Brompton Pulp & Paper Co., and Provincial Paper Mills have already been started up; the Thunder Bay, Fort Frances, and two Ste. Anne machines are practically in, while drives for two Anglo-Canadian machines, a second Thunder Bay machine, and the second Manitoba machine are under construction.

QUEBEC

Port Alfred Makes Good Showing

The third annual report of Port Alfred Pulp & Paper Corp. furnishes some idea of the potentialities of the Canadian pulp and paper industry. With the company's production of newsprint for the year ended December 3, 1926, less than the capacity of one machine, as compared with four machines now in operation, it was still able to show $2.30 per share earned on the 120,000 shares of no par value common stock, after liberal allowances for depreciation and depletion. This was not altogether surprising after the 1925 showing of the company, when earnings resulting from the sale of sulphite only, proved more than sufficient to carry the two newsprint machines which were under construction at the end of that year.

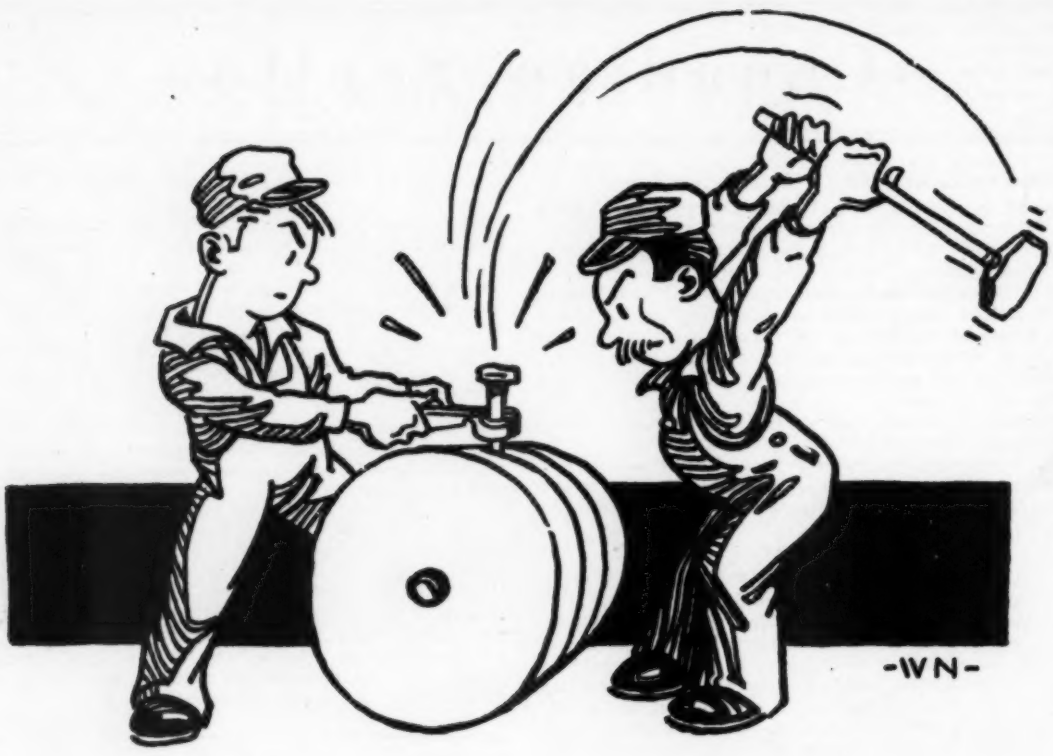
The production of sulphite for sale, as pulp, during the year was 42,128 tons, all of which was widely distributed to paper mills in the United States and Canada at slightly higher net prices than the previous years. The construction work started in 1925 for the erection of a four-machine news mill with a capacity of 450 tons a day, was carried on throughout the entire year. Number one machine was put into operation in June; number 2, in August; number 3, in November, and number 4 was ready for operation at the end of December and was started up in January of this year. The production of newsprint for the year was 26,931 tons.

An additional digester and a new acid system, with the necessary auxiliary machinery, was installed during the year, which will enable the corporation to have for sale some 35,000 tons of sulphite per year, after providing the sulphite required for the news mill.

Completion of the construction program has brought the property account up to $27,515,237, as compared with $8,951,881, while the total assets are shown at $30,764,326, as compared with $12,014,883.

Brompton Shows Lower Profits

Earnings of Brompton Pulp & Paper Co. for the year ended December 31, 1926, fell somewhat below those of the preceding fiscal period, but the company improved its work-



HIT IT AGAIN, HARRY!

And Harry hits it again, and keeps on slamming until something gives way. The sad part of it all is that, with every swing of the sledge, he is knocking off a good size chunk of the sale value of the roll.

The roll separation problem is one that causes no slight consternation in many Paper Producing Plants. It is not only annoying, but costly and, may we say, unnecessary.

The patented CAMACHINE system of Winder Drum Grooving assures the positive separation of rewound rolls.

Paper Producing Plants in which the paper making process goes along smoothly to the last step — the Slitting and Winding — and then hits a snag, would profit by investigating the merits of the CAMACHINE line.

CAMERON MACHINE COMPANY

61 POPLAR STREET, BROOKLYN, NEW YORK

PATENTEES AND BUILDERS OF CAMERON MACHINES

ing capital position, despite the payment of a $1 dividend on the common stock.

President Tobin explained that the decline in net profits, as compared with 1925, is accounted for by a reduction in selling price of some of the products manufactured by the company, and also by the fact that the company was out of the groundwood market during the latter part of 1926 in order to accumulate stock for the newsprint mill at Bromptonville. All the groundwood made at that point is now being used in the news mill, which should materially increase the earnings of the company.

Dominion Engineering Profits by Industry Expansion

A more striking record of progress than that shown by Dominion Engineering Works, Ltd., for 1926 has not been revealed by a Canadian industrial corporation statement in a long time. With an increase of approximately 150 per cent in net profits, an increase of nearly 100 per cent in working capital, and a showing of $22.25 per share on the capital stock after substantial depreciation charges among the high lights, the exhibit is assuredly remarkable.

The volume of new business entered and of work completed was much in excess of any previous year, and in most departments the plant was worked to full capacity. In order to execute the large quantity of work, considerable additions to the manufacturing facilities were necessary. The manufacturing area of the shops was increased by converting the building put up for storage into machining space and removing the carpenter shop to a new building.

The principal contracts under construction in the shops during the year were as follows: Two 12,000 h. p. turbines, 60 ft. head, for Abitibi Electric Development Co., at Island Falls, Ont.; two 11,100 h. p. turbines, 146 ft. head, for Shawinigan Water & Power Co., at St. Narcisse, Que.; one 28,000 h. p. turbine, 56 ft. head, for Manitoba Power Co., at Grand Falls, Man.; four 34,000 h. p. turbines, 93 ft. head, with the embedded parts of a fifth unit for Canadian International Paper Co., at Chelsea, Que.; four 24,000 h. p. turbines, 66 ft. head, with the embedded parts of a fifth unit for Canadian International Paper Co., at Farmers' Rapids, Que.; two 1,100 h. p. turbines, 22 ft. head, for Sherbrooke Land & Water Power Co., at Sherbrooke, Que.; one 2,300 h. p. turbine, 46 ft. head, for Quebec-Southern Power Corp., at Rawdon, Que.; four 270-in. newsprint machines for Canadian International Paper Co., at East Templeton, Que.; two 160-in. newsprint machines for St. Lawrence Paper Mills, at Three Rivers, Que.; two 234-in. newsprint machines for Ste. Anne Paper Co., at Beaupré, Que.; one 8,000 kw. electric steam generator for Aluminum Co. of Canada, at Arvida, Que.; one 12,000 kw. electric steam generator for Canadian International Paper Co., at Three Rivers, Que.; one 12,000 kw. electric steam generators for Manitoba Paper Co., at Pine Falls, Man.; one 750 kw. electric steam generator for Canadian Paperboard Co., at Campbellford, Ont.; one 500 kw. electric steam generator for Canadian Light, Heat & Power Co., at St. Timothée, Que.; one 21,000 kw. electric steam generator for Canadian International Paper Co., at East Templeton, Que.; three 42,000 kw. electric steam generators for Canadian International Paper Co., at East Templeton, Que.; one 35,000 kw. electric steam generator for Port Alfred Pulp & Paper Corp., at Port Alfred, Que.

Progress at Lake St. John Mill

The Dominion Engineering Works, of Montreal, have secured an order for two newsprint machines for the new mill being erected by the Lake St. John Power & Paper Co., on the Mistassini River.

The town which is arising as a result of the erection of the mill has been incorporated under the name of Dolbeau, in honor of the first monk who settled in the then uninhabited region north of Lake St. John.

Supplementary letters patent have been granted to the company, by which the capital is being reorganized. By the new arrangement the capital stock will be reduced by the cancellation of 20,000 fully paid 7 per cent cumulative preference shares of $100. This leaves the stock now at 20,000 of these shares and 100,000 shares of no nominal par value.

The company expects to spend about $8,250,000 before starting to ship any paper toward the close of the present year. John Stadler, the general manager, on returning from a recent visit to the site of the new mill, stated that good progress was being made with such construction work as could be carried on during the winter, and with such materials as could be transported over winter roads. Completion of the railway at the mill site will greatly facilitate construction work.

At present the company is buying its electric power from the Duke-Price Co., but next year it will harness two series of rapids which flow along its property and will build its own hydro-electric station.

Howard Smith Shows Higher Earnings

The earnings of Howard Smith Paper Mills, Ltd., show considerable improvement for the year 1926 over 1925, and the net profits were equal to 7.62 per cent on the common stock, as compared with 4.74 per cent in 1925. The working capital position was improved to the extent of over $100,000 to $1,417,223, largely owing to a reduction of the bank loan from $225,000 to $120,000, and total assets are shown at $13,067,196.

The company continues to carry its trade marks at $190,000, in which respect it is perhaps unique among Canadian paper companies. In his remarks to shareholders, President C. Howard Smith stated that the company during the year had become interested in the organization of the Canadian Cellulose Co., for the manufacture of bleached soda pulp. This company has erected at Cornwall, Ont., a plant which is expected to be put into operation very shortly, and its product will be absorbed largely by the parent company.

It was announced a short time ago in these columns that the Lake St. John Power & Paper Co., which is erecting a 200-ton newsprint mill at Dolbeau, had contracted for its entire output for ten years to a large American publishing firm. It is now learned that the contract has been entered into with the Hearst interests, who have also contracted for the entire news output of the Brompton Pulp & Paper Co. for 1927.

Laurentide Co., Ltd., has increased its limits by the purchase of the De Bertruif Seigneury, in the St. Maurice Valley. The seigneury was owned by F. W. Conway, and covers 180 square miles, on which there is said to be an excellent supply of timber, many of the trees having a diameter of from 12 to 14 inches. The price was in the neighborhood of $1,250,000.

W. G. Beauchemin, mayor of the town of Price, and chief engineer for Price Bros., recently sustained a serious and painful accident at the company's repair shops when he was struck in the eye by a piece of iron.

Application has been made to the Provincial Parliament for greatly increased powers for a company organized some time ago to construct a canal at Beauharnois, on the St. Lawrence River. The measure has met with stiff opposition by numerous interests on the ground that the proposed development would seriously interfere with navigation as well as with existing power plants in the neighborhood. Among those opposing the application was Howard Smith Paper Mills.

Jules Bertrand, 31 years of age, working at the Belgo Division of St. Maurice Valley Corp., Shawinigan Falls, had his skull crushed last month by a heavy roll of newsprint, and died a few hours later.

There is a movement on foot for making the St. Maurice River navigable all the way from Grand 'Mère to LaTuque. This is a very beautiful stretch of river. The large number of pulpwood and sawlogs handled above Grand 'Mère for the Laurentide, Belgo, Wayagamack, Canadian International and St. Lawrence paper mills is one of the difficulties in the way.

An additional block of Port Alfred Pulp & Paper Corp. 6 per cent first mortgage bonds, amounting to $2,175,000, have been placed by Wood, Gundy & Co. First mortgage bonds are limited to $15,000,000. A total of $8,233,500 have been

Blazing the Trail

EVERY age has its trail blazers—those inquisitive beings with an urge to enlarge the horizon of human knowledge. Some have put out to sea in frail shells of boats, powered with oars, their course recorded for others through spoken word and uncertain memory. Some have shouldered flintlock and axe to wrest new breathing space for civilization from unfriendly aborigines and unwilling nature.

And some explore new fields of thought, braving prejudice and tradition, fighting their ways through ignorance and fear of change. For mankind's desire is to go ever forward into the unknown—toward the eventual unknowable.

The broken twig, the slash in the tree, the cairn of stones—all have served to mark the advancing step of man's progress. But they are records that must stay where they are put, while today's trails run into the intangible things of the mind's accomplishment. So the newer trails are blazed with records of paper, permanent, portable, and adaptable.

Hammermill Paper Company

Erie, Pennsylvania

issued, including the present issue, of which $308,000 have been redeemed by sinking fund. The proceeds of this issue, Series B, will be used to retire in part deferred notes and other corporate purposes.

Canipco News

Land above the Chelsea power house, as far back as Cascades in the Gatineau Hills, a distance of seven and a half miles, has been flooded and a new lake formed. The total area of flooded land is 387 acres, and at its widest point the new lake measures about half a mile. The benefits of the Bitobi dam, near the headwaters of the Gatineau River, are already being felt, as the annual floods which regularly caused considerable inconvenience and damage to property along the lower Gatineau have been eliminated this year.

Sixteen men, who were working in the excavation of the new channel of the Gatineau River at Paugan Falls, recently had a narrow escape, when rock, which had been broken during blasting operations loosened but held in place by the frost, were displaced by a sudden thaw and came crashing down into the 40-foot cut where the men were working. Four of the men were injured, three seriously.

The Canadian section of the Waterworks Association recently held a convention in Ottawa, at which Walter Blue, of the Gatineau Power Co., gave an interesting talk on the power developments being carried on at the present time at various points along the Gatineau River.

Canadian International Paper recently ordered from Canadian General Electric Co. twenty electrically operated flow meters for use in their new Gatineau mill.

As the time for starting production at the Gatineau mill draws nearer and nearer, considerable changes are taking place in the staffs of other mills, from which men are being drawn to fill positions at the new mill.

A. D. Ross has resigned from the electrical department of the Wayagamack Pulp & Paper Co. to take a position on the engineering staff of the Canadian Comstock Co., Montreal.

Some of the largest of British banks are actively concerned in the proposition of a syndicate to develop the resources of the Lake St. John region, and Premier L. A. Taschereau has announced that the syndicate would spend $500,000,000 in industrial development in that district. Ten or a dozen men comprise the syndicate, commanding between them many millions. No public issue of stock is contemplated. Seemingly the name of Baron Gainford, president of the Federation of British Industries, and one of Briton's leading commercial figures, has been openly associated with the enterprise.

Considerable opposition has developed to the proposal to construct a railway line from the junction of the Haricanna and Turgeon Rivers, in Quebec, to Iroquois Falls, in Northern Ontario. The promoters claim that its construction would be followed by the erection of a 200-ton paper mill at the northern terminus in the province of Quebec; but Col. L. T. Martin, vice-chairman of the Temiskaming and Northern Ontario Railway, said that this would not guarantee traffic to maintain the road, and if it was required for this purpose only, a branch should be built from Taschereau on the National Transcontinental Railway to the site of the proposed mill.

Under the inspiring leadership of the plant physician, Dr. Fluhman, a class is being held at Price Brothers' Kenogami mill, to qualify for St. John Ambulance Association badges. The class is meeting weekly and is well attended.

Elie Lebray, employed in the electrical department at the Kenogami mill, was recently presented with a medal by the Canadian Electrical Association for a most courageous act. Disregarding his personal safety, Lebray rescued a comrade from under wires carrying 44,000 volts, and brought him back to consciousness by using artificial respiration.

Mr. Frank W. Clarke, vice-president of the Anglo-Canadian Pulp & Paper Mills, has sailed for a five weeks' trip to Europe.

Lumber camps in the province, broke ahead of time, due to the early spring, and as a result of the mildness of the weather and consequent rapid melting of the snow, a large

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Gears that are *thoroughly* lubricated last almost indefinitely.

And, today Bowser can offer a system for lubricating gears *thoroughly;* a system built around our Fig. 801 Lubricator-Pump, as illustrated.

With every stroke of the plunger in this pump, a predetermined amount of lubricant (grease or heavy oil) is forced into a bearing or on the gears. "Infallible lubrication"—that's exactly what this new Bowser system offers. The system is simplicity itself.

No forgetting, no waste, and no dry gears or bearings—that's the Bowser guarantee for this newly-perfected system. It is particularly adapted to the use of dryer drives and open gears.

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Careful—Intelligent—Quick Service

STANDARD SELF ALIGNING BELT FASTENERS

You can't go wrong on transmission or conveyor belts. Self Aligning hold the plate firm and square on the belt while rivets are being driven.

It is not necessary to use a rivet holder, nibs in the rivet hole align the rivet lengthwise of belt, the right way.

Self Aligning are rust proof and last indefinitely in wet or damp places, and you don't throw them away every time you take up a belt.

You need not turn your heavy wide belt over to clinch. Rivets may be clinched by driving against a block of metal on the under side of the belt.

Send for sample fastener for comparison with what you are now using. For 3 to 8 ply transmission to 5/16-in. thick conveyor belts.

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UPSON WORKS
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Seamless felts for fast running.
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THE HOME OF STEEL SHELL BURRS
AND
YELLOW JACKET SHOWERS

All Products Guaranteed to Suit You

F. W. Roberts Manufacturing Company

Read the "ROBERTS IDEA"

Lockport, N. Y. **Niagara Falls, Ont.**

amount of felled timber has been left in the forest. Despite the early closing of the camps, the lumber cut is expected to be normal for the past winter, although it did not come up to prewinter expectations.

The Brown Co., which owns a number of mills in the United States and a large kraft mill at La Tuque, Que., has acquired the timber limits of the Cape Magdalen Pulp and Lumber Co., which has gone into liquidation. It is said that the purchasers intend retaining their new limits as a forest reserve. The pulp mill on the property will not be opened, and timber may perhaps be shipped to the company's mills in New Hampshire.

Professor Howard T. Barnes, of the Physics Department of McGill University has returned from a trip to La Tuque, where he again demonstrated, in a practical manner, the qualities of thermit for the purpose of breaking up ice jams and preventing flood conditions. A heavy ice jam below La Tuque Falls, on the St. Maurice River, has caused the water to back up more than 10 feet and forced the Brown Company's mill at La Tuque to shut down for lack of power. One ton of thermit, judiciously distributed at strategical points, had the desired effect. In Dr. Barnes' own words this was a very "pretty example" of what thermit can do to an almost impregnable mass of ice, in this particular case there being a thickness of forty feet of pack ice.

The Blaw-Knox Co., Pittsburg, Pa., have recently appointed Watson Jack and Co., Ltd., Montreal and Vancouver, Canadian agents for their hammer-welded digesters.

ONTARIO

Thunder Bay Mills to Build Docks and Railroad

Urging immediate action, the Port Arthur city council recently passed a resolution requesting the Dominion Government to arrange for dredging a slip into the site of the Thunder Bay paper mills. The company will erect a series of docks to handle its limestone, sulphur and coal imports and its paper and pulp exports. It is proposed to commence erection of the wharves early in the spring, and have them completed in time to handle all products of the mills, which, it is expected, will be operating in the fall of the present year.

The foundation work will require a large amount of piling, and, when completed, the wharves will handle tonnage estimated at 800,000 tons per year, valued at $10,000,000.

The Port Arthur Chamber of Commerce has forwarded to the Government a similar resolution asking for the dredging.

The Thunder Bay Paper Co., will also construct this year a thirty-mile railway into the heart of its pulpwood limits in the Nipigon district. According to officials of the Newaygo Co., which is the woods-operating end of the Thunder Bay Co., survey work has already been done, and the laying of steel will be commenced as soon as is practicable. They will have 1,500 men operating in the woods next winter, and this number will be maintained for twenty years.

Some fifty-two comfortable houses were built during the past season for the Spruce Falls Co., at Kapuskasing, Ont. The contract was let to Hill-Clarke-Francis, general contractors, of New Liskeard, in the latter part of September, 1926, and is now completed except the outside finish, that is, the stucco and painting, which cannot be applied until spring.

A new pulpwood conveyor has been built at the plant of the Howard Smith Paper Mills, Cornwall, at a cost of $25,000.

Spanish River Shifts Production

A readjustment to a certain extent of production among Canadian newsprint mills, as a result of the slight surplus that has developed in productive capacity, has caused a shifting by Spanish River Pulp and Paper Mills, of a portion of its usual output to allied mills.

These are the Fort William Paper Co., and the new Manitoba Paper Co.'s mill at Pine Falls, Man., in both of which Spanish River has a considerable interest. The assignment of

Experience is Sometimes a Costly Teacher!

THE time to learn exactly how a valve will act in service is **before** not **after** you have put it on the job.

So why experiment when you can specify Darling Valves and **be sure?**

There's a Darling Gate Valve for every place and purpose—a Darling Gate Valve built to stay tight, wear long, and operate with ease. And men who use Darlings say that their efficiency reduces production losses to a minimum.

Self-aligning, self-cleaning discs. No pockets or ribs to collect sand and scale. Simple and compact—will not jam nor dissemble. Easily repaired in the plant—yet repairs are seldom needed.

Ask the old-timer what he thinks of Darlings—and write for construction features.

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One characteristic of a Nash Hytor Vacuum Pump that appeals strongly to the practical mill man is its simplicity of operation. It is as easy to run as an electric fan. No pump expert or skilled mechanic is needed. Other than lubrication, no attention is necessary.

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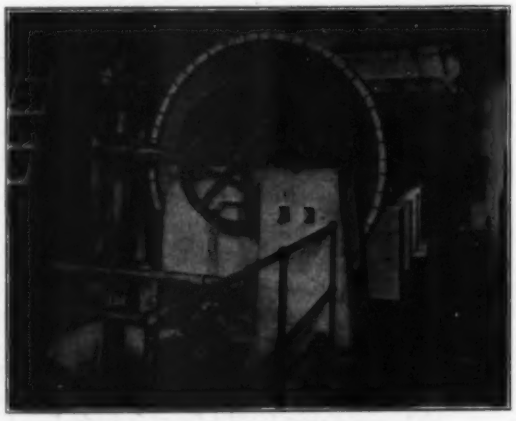
Nash Hytor
VACUUM PUMPS AND COMPRESSORS



Paper Mill Tanks

The above installation in a well-known Ohio paper mill is only one of Hauser-Stander's successful installations.

Hauser-Stander has been building tanks for over fifty years and has particular knowledge of paper mill men's requirements.

The Hauser-Stander Tank Co.
CINCINNATI, OHIO

For All Unusual Service Demands,
SPECIFY

Powell Valves

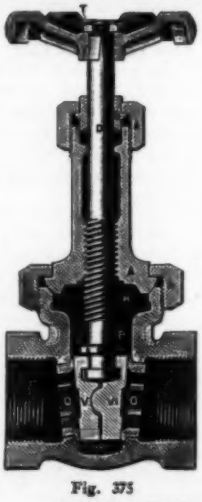


Fig. 375

Powell White Star Gate Valves are obtainable in bronze or iron body bronze mounted.

Bronze White Star Gate Valves are furnished with taper seats and double wedge Powellium Nickel discs, sizes ¼ to 3 inches.

Iron body valves have Powellium nickel seat and disc rings. Sizes 2 to 24 inches.

All Powell Products insure the utmost in service under all conditions.

Circular on Request

THE WM. POWELL CO.
2521-2531 Spring Grove Avenue
Cincinnati, Ohio

this production has been made on a basis that will be profitable to Spanish River, although while the arrangement lasts, it will cut down the production credited in the records to the Spanish River Mills.

Adopt Improved Paper Shipping Method

A number of mills in the Niagara district have adopted a method of shipping book paper which has been in vogue across the border for some time. The system provides for the piling of the paper on a platform and screwing the paper down tightly. Platform and stock are then placed on trucks transferred directly to the cars, being shipped in this way to customers in the large centers.

During the past year, according to information recently presented in the Ontario Legislature in connection with the central Ontario Systems of the Hydro-Electric, the province operated its groundwood mill at Campbellford at a loss of $46,341. The deficit in connection with the mill, which has a capacity of 25 to 30 tons a day, included a charge for power. If no charge had been made for power, the mill would have shown a surplus of $11,875.

While this plan is somewhat more expensive than the ordinary method, the extra outlay is offset by the splendid condition in which the paper reaches the pressrooms of large printing concerns, and by the fact that the stock is not damaged in transit.

Port Arthur Shipbuilding Makes Agreement

The Port Arthur city council has made a new arrangement with the Port Arthur Shipbuilding Co., the basis of which will be embodied in a by-law to be submitted to ratepayers on April 6. If the by-law carries, the company will be granted a fixed assessment of $125,000 for ten years.

Having recently completed the amalgamation of its financial resources with the Collingwood Shipbuilding Conpany, The Port Arthur concern is now ready to proceed with its program of development, including specializing in the manufacture of pulp and papermaking machinery, and of boilers, etc. In return for the fixed assessment privilege, the Port Arthur Shipbuilding Co., guarantees to spend $300,000 in new development work and guarantees to maintain an annual payroll of $200,000.

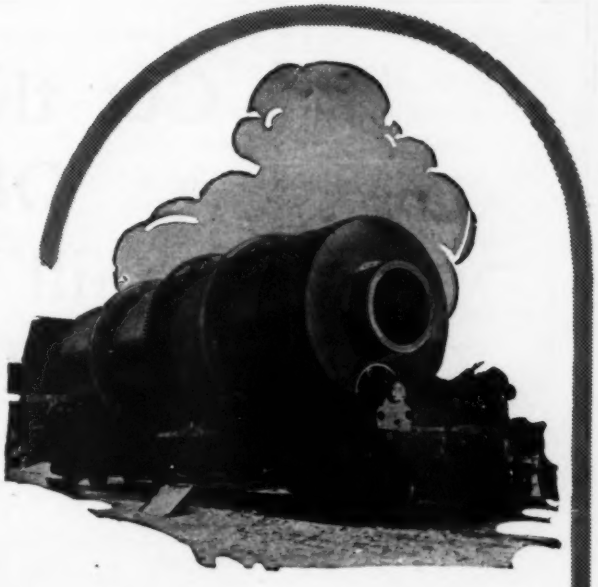
Roderick Olzendan, formerly secretary of the Industrial Relations Department of the Spanish River Pulp and Paper Mills, at Sault Ste. Marie, has resigned and become connected with the International Labor Office at Geneva, where he will remain for a considerable time, after which his duties will bring him to New York City to reside. Mr. Olzendan has been succeeded by D. B. Chant.

J. McArthur has bought the assets of the Canada Waxed Paper Co., Toronto, which recently made an assignment. It is understood that the creditors will receive about twenty cents on the dollar. Mr. McArthur is organizing a new company, and the industry on Carlaw Avenue, Toronto, is now being continued.

The annual meeting of Canadian Pulp Products, Ltd., was held in Hamilton recently. The concern is operating an egg-carrier plant on the premises of Cameron and Fraser, Simcoe St., Toronto. W. M. Cameron, vice-president and general manager of the company, reported that good progress had been made in the installation of the plant, which is doing considerable experimental work, but will soon be producing. Walter Wood was elected president; W. M. Cameron, vice-president and general manager; J. H. Pickett, secretary-treasurer; and E. F. Clarke and J. Henderson, directors.

The Canadian Barking Drum Co., Toronto, has recently installed three new barking drums in the plant of Fort Frances Pulp and Paper Co., at Fort Frances. The company is also manufacturing six drums of the U-bar type for the Lake St. John Power and Paper Co.

Work of installing the hydro transmission line from Big Falls, north of Atikokan, Ont., to Fort Frances, has been com-



It's All in the "Making"

Long life—generous production—lowest operating costs—all these advantages in paper mill equipment can be traced back to the structural shop. They all depend upon how equipment is made, materials and assemblage. Here's how Manitowoc Equipment is made:

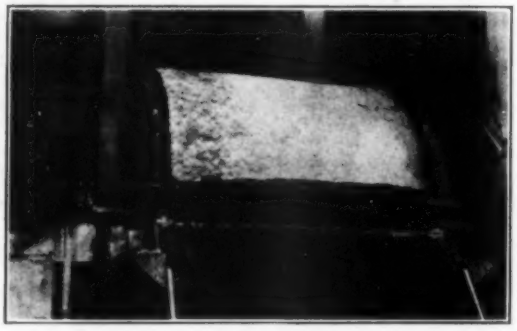
1. Only the best grade of materials are used.
2. Highest class of workmanship is maintained throughout.
3. All pieces are precision-made.
4. Heavily and durably constructed.
5. All equipment is built for longer life.

Let us tell you why Manitowoc paper mill equipment will give you increased production at lowest operating costs. Write for details.

Manitowoc Engineering Works
Manitowoc, Wisconsin

MANITOWOC

Get the Most OUT of your mill by putting an OLIVER IN



Oliver High Density Thickener

There is an OLIVER for Washing Stock, Soda and Brown.
There is an OLIVER for Deckering Soda Pulp.
There is an OLIVER for Washing Lime Mud.
There is an OLIVER for High Density Thickening.
There is an OLIVER for Deckering Ground Wood.
There is an OLIVER for Reclaiming White Water.

Putting any one of them in your mill means getting more out of it

Let us tell you how much more

See page 381 in the 1926 Paper and Pulp Mill Catalogue.

Oliver Continuous Filter Co.

San Francisco
802 Cunard Building

New York
1547 Aeolian Building

London
11 Southampton Row

Johannesburg, South Africa
E. L. Bateman, The Corner House

pleted. The work of the contractors occupied about a year in the clearing of the right-of-way, and in the erection of steel towers and placing of wires along a distance of about 150 miles.

Work has been started on excavations for the foundation of a water filtration plant to supply the towns of Thorold and Merritton with pure water, and also of a second such plant to supply the Lincoln Paper Mills, of Merritton. Construction of these plants has been rendered necessary by the dredging operations about to be resumed in the new Welland Canal, which will render the water unfit for use for possibly the next two or three years. Owing to the mild weather, dredging is being started up earlier than had been anticipated, and as the filter plants are not yet completed, the parties interested are considering the advisability of proceeding with an injunction which was held over some time ago on the statement of government authorities that dredging activities would not be resumed until a later date.

Abitibi Jottings

The financial report of the company for the year 1926 has lived up to expectations. Despite the lower price of newsprint, the company shows increased earnings, with net profits, after payment of preferred dividend, equivalent to $11.56 per share on the common stock, as compared with $11.19 in 1925 and $10.95 in 1924. A strong working capital position was maintained, and the balance sheet reveals a very material expansion of potential earning power, as well as further important additions to reserves and surplus.

Abitibi Power and Paper Co. has made an issue of $4,000,000 6 per cent, 4-year gold coupon notes to finance its purchase of the Abitibi Fibre Co. The acquisition of the old Mattagami sulphite mill diversifies Abitibi's production, and should there be slight over-expansion in the newsprint production in the course of the year, the company, not having all its eggs in one basket, should have a more stabilized earning power.

It is now considered probable that instead of constructing a 200-ton news mill at Cochrane, as was announced some time ago, the company will add the newsprint mill at Smooth Rock Falls, in connection with the existing sulphite mill, where there is the required wood-handling and log-driving equipment for taking care of the increased pulpwood consumption. Moreover, the power plant at Island Falls, has sufficient capacity to take care of the increased power which would be required by the expansion.

During February the Smooth Rock Falls mill turned out the record total of 4,800 tons of unbleached and bleached sulphite, all of which was shipped across the border, together with 100 tons which was in stock at the beginning of the month. According to William Ellis, mill manager, the new 100-ton Jensen tower acid system is working satisfactorily.

The safety plug installed on the air hoist by Horace McEwen a few months ago had its first tryout recently on Number 7 machine at Iroquois Falls. The tube came off when the hoist was up high. Instead of dropping, as it would have done before this device was put on, it came down slowly without damage. The device consists merely of a plug in the pipe with a hole small enough to prevent the air escaping so quickly as to cause the hoist and roll to fall.

The head office of the Abitibi Electric Development Co. has been transferred from Toronto to Iroquois Falls.

Provincial Paper Sold

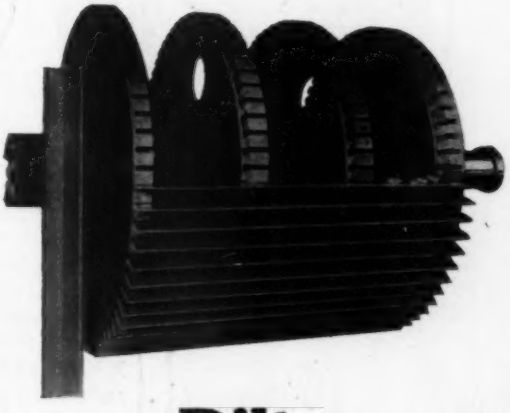
Acquisition of control of Provincial Paper Mills, Ltd., by Dominion Securities Corp., Ltd., in a cash transaction involving about $4,000,000 was announced less than a week ago. Through this transaction a flourishing Canadian organization, that has formerly been controlled by United States capital, comes into Canadian hands.

The majority common stock has been purchased for $135 per share and the same offer is being made to minority shareholders. It is proposed to retire the preferred stock at $107 a share. It is not unlikely that the company's bonds will also be retired, and some new financing may be announced in the course of the current month.

The company is the largest producer of high-grade papers

Dilts

The roll is the heart of the beater. The first practical bandless beater roll was "built by Dilts" back in 1905 — since then around 800 of these rolls have been furnished for all grades of stock. So we *do* know how to build rolls.



Dilts
NEW TYPE
Beater

equipped with a Dilts keyed type bandless roll marks the latest improvements obtainable in beater construction. Circulates heavier stock—mixes better and faster—and more economically too.

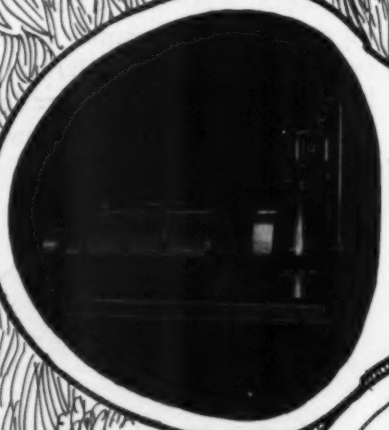
So we *do* know how to build beaters.

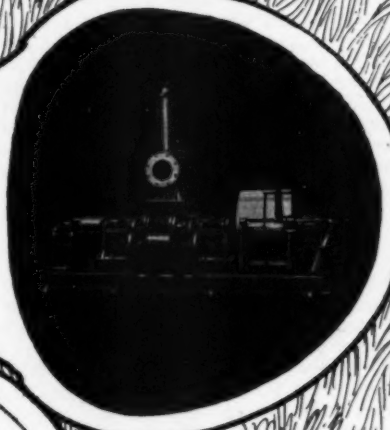
Let us figure with you on your next beater installation or let us rebuild your old beaters to this efficient common sense type.

"Your Paper Is Made in Your Beaters"

Dilts
MACHINE WORKS, Inc. FULTON, N.Y.
EXPORT OFFICE - 15 PARK ROW - NEW YORK CITY

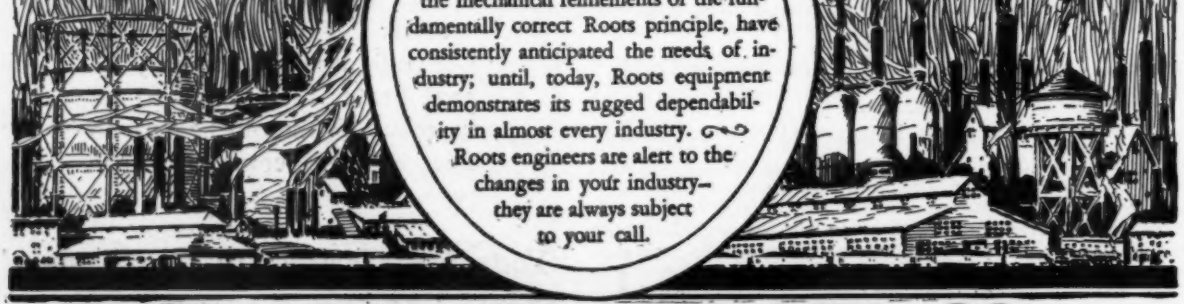
Keeping Pace With Industry





It's a far cry from the crude Roots Water Turbine of 1859 to the high-efficiency blower of 1926. There is a wide span of engineering development between the Roots Fluid Meter of 1863 and the highly developed Roots Gas Meter of today. Yet the old and the new are alike in one thing—their principle of operation—for the Roots principle is as fundamentally correct today as it was 67 years ago.

—and Roots equipment is a factor in all industry today, because the mechanical refinements of the fundamentally correct Roots principle, have consistently anticipated the needs of industry; until, today, Roots equipment demonstrates its rugged dependability in almost every industry. Roots engineers are alert to the changes in your industry—they are always subject to your call.



The P. H. & F. M. ROOTS CO.

CONNERSVILLE. INDIANA

CHICAGO
Peoples Gas Building

NEW YORK
120 Liberty Street

in Canada, and operates mills at Port Arthur, Thorold, Mille Roches and Georgetown.

By letters patent the name of the Wilkinson Paper Company, Ltd., Toronto, has been changed to the C. V. Syrett Paper Co., Ltd. C. V. Syrett, for many years managing director of the Victoria Paper and Twine Co., some months ago purchased the business of the Wilkinson Paper Co. and became its president and general manager. He is head of the new organization bearing his name.

The plant of the International Fibreboard Co., Midland, which was burned in August last year and had been closed down ever since, has resumed operations. The work of rebuilding was started a few weeks after the fire and followed by the installation of the necessary equipment. Rapid progress was made in reconstruction, and the plant is now employing 75 hands.

Improvements at Kenora

Extensive improvements are being carried out at the plant of the Kenora Paper Mills, Kenora. Two new barking drums are being installed in the wood room, together with an additional slasher table. A new boiler of 800 horse power has also been installed. A new sorting conveyor, transfer chain and additional wood stacking equipment are all planned, and the work will be proceeded with at an early date.

In the sulphite mill the erection of a new refining screen and one groundwood screen will make for a thirty per cent increase in production. A departure from the usual procedure, and what is considered to be one of the best improvements in the industry for a long time, will be the installation of two save-all filters for reclaiming fiber from the white water, by means of which it is expected to recover about 85 per cent of the fiber now lost in the white water.

The Daverin Paper Mills, of Camden East, have been adjudged bankrupt, and Humphrey Colquhoun has been appointed custodian. The plant turned out bond, envelope, offset and specialty papers, and the production was about 12 tons a day. The Daverin Paper Mills have had a career of many ups and downs, and the property has changed hands many times during the past few years.

Canadian Power Specialty Company, Ltd.

Announcement is made of a new Canadian company which will concentrate on the manufacture of well-known power plant equipment, and which has purchased the plant of the former Engineering and Machine Works of Canada, Ltd., at St. Catharines, Ontario. The new corporation will be known as the Canadian Power Specialty Co., Ltd., with main office at the works, and sales offices in Ottawa, Toronto, Montreal, Moncton, and North Bay.

MANITOBA

Pulpwood Lease Has Fair Wage Clause

There was tabled in the House of Commons recently a contract between the Federal Government and the Manitoba Paper Co. As set forth in the contract, the company was required to expand its mill at Pine Falls to a capacity of 250 tons of newsprint a day before September, 1927, in return for exclusive pulpwood concessions.

The company is entitled, under annual permits, to the exclusive right to cut 6,000,000 cords of spruce and balsam under the supervision of the Forestry Branch of the Department of the Interior, the company to bear the expense of the supervision. The area prescribed is north of the Winnipeg River and on the east and west sides of Lake Winnipeg.

Hon. Peter Heenan, Minister of Labor at Ottawa, caused a clause to be inserted providing for the protection of the labor which will be employed by the company in the woods, and at the mills. It is stipulated, "That the company shall pay to those employed in the industry wage rates not less than those which are generally accepted as current in each trade or occupation in similar industries, and shall maintain

The HARVEY-LEWELLEN

Paper Thickness Control System *for* Paper Mills

¶ This control system will automatically control the thickness of paper to the specified limit.

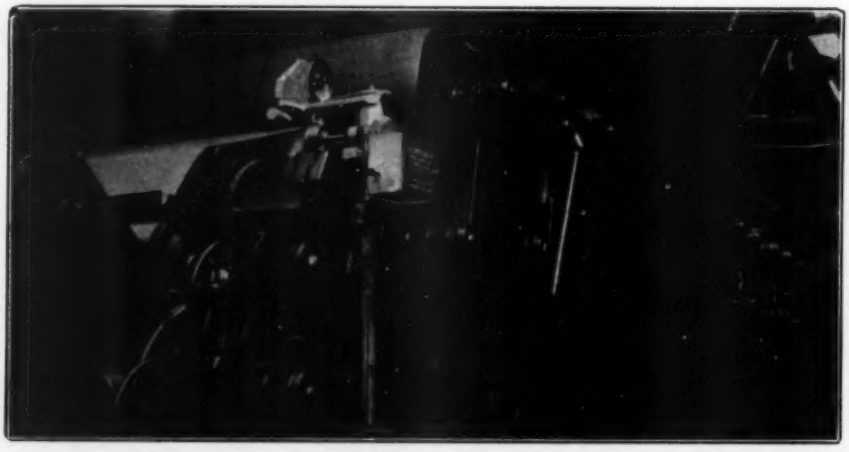
¶ Systems are installed complete without stopping the paper machine or interrupting production in any way.

¶ Every installation has not only maintained uniform thickness but has resulted in substantially increased production.

Manufactured by

LEWELLEN MANUFACTURING CO.
COLUMBUS, IND.

ENTERPRISE MACHINE CO.
MIDDLETOWN, OHIO



SHOWING CALIPER AND CONTROLLER IN OPERATION ON 110" BOARD MACHINE

conditions of labor not less favorable than those prevailing in similar industries in the district."

The Government has observed during the past 27 years a policy known as the "fair wages policy," under which contractors engaged in the execution of public contracts have been required to observe the wage rates and hours of labor which are current in the district for the various classes of labor employed, but it is the first time that it is extended to apply in the administration of the Crown lands of Canada.

Another Big Mill

New York, Montreal and Chicago financiers are reported to be combined in the plan to construct a 600-ton paper mill at Whitemud Falls, Man., for which application has been made to the Federal Government. Timber limits involving 11,500,000 cords of pulpwood are being sought. It is claimed that the enterprise will involve an outlay of $20,000,000, and that ultimately products of the mills will go to Europe via the Hudson Bay route. It is estimated that about 500,000 horsepower can be developed at Whitemud Falls and neighboring sites.

Interest in Manitoba's Resources

Numerous questions are being asked the Minister of the Interior at Ottawa in connection with the Government policy in regard to disposal of the pulpwood resources of Manitoba, which are still under the control of the Federal Government.

In reply to these enquiries, Hon. Charles Stewart stated that no application had been received for the construction of a mill at Selkirk. The Department has an application from the Backus interest for territory in Manitoba for the construction of a mill in the vicinity of Winnipeg. As that application was based on stumpage dues for all territory north of township 46 in Manitoba, and only an offer of twenty cents of a bonus south of the boundary, the application was not given further consideration.

The Government has no designed pulpwood berths for sale in the province, but there are two possible developments, one on the Nelson River and the other on the Saskatchewan. As to future applications, they will be given consideration as received and no awards will be made without public competition after due advertisement. Water power, so far unalienated, appurtenant and essential to development of new pulp and paper industries will be reserved.

As a result of its having secured the additional amount of pulpwood required for increasing the capacity of their new mill from 125 to 250 tons of newsprint per day, the Manitoba Paper Co. has awarded to Carter Halls Aldinger further contracts for $1,500,000, which will bring to $8,000,000 the expenditures on this plant.

BRITISH COLUMBIA

Report of B. C. Pulp and Paper

For the year ended December 31, 1926, the British Columbia Pulp and Paper Co., Ltd., has issued its first a.nual report to shareholders since reorganization of what was formerly the Whalen Pulp and Paper Mills. The exhibit is a particularly satisfactory one, both from the point of view of earnings and balance sheet position.

Profits of operations for the year under review, are shown at $807,332, while deduction of interest on bonded debt at $320,420, left a balance of $486,812. In this connection it is interesting to note that shortly after the company reorganized, early last year, a letter to bondholders estimated that surplus profits of from $300,000 to $400,000 over operating expenses and interest charges could be reasonably expected. It will be seen that expectations have been well exceeded.

Pulp and Paper Mill for Prince George

Hon. T. D. Patullo, minister of lands for British Columbia, has announced that a full agreement has been reached between the provincial government and Eastern Canadian in-

For the Paper Industry

There's one way that you can tell if the calender rolls that you are now buying are as good as Butterworth Rolls, and that is—

Try

BUTTERWORTH

***Long Wear* Rolls**

for

super, coated and glassine

H. W. Butterworth & Sons Co.

Established 1820

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Plants at Philadelphia and Bethayres
Branches: Providence, R. I., and Charlotte, N. C.
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L. V. ESTES INCORPORATED

Industrial Engineers

Specializing in

LABOR COST REDUCTION AND MATERIAL HANDLING

4753 BROADWAY
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Sirocco

Hood Systems and Heat Economizers, Heating, Ventilating, Air Conditioning and Vapor Absorption Equipment.

Descriptive Bulletins on Request

DRYING SYSTEMS INC.
1800 FOSTER AVE.
CHICAGO, U.S.A.

NEW YORK · DETROIT · ATLANTA · CLEVELAND · SAN FRANCISCO

Lift Electrically

Why pull, tug, strain and waste your time with slow lifting methods, when the ROEPER TYPE "R" Electric Hoist will do the work twenty times as fast. The price is surprisingly low. Send for Bulletin.

Roeper Crane & Hoist Works, Inc.
1724 N. 10th St., Reading, Pa.

GOULDS

INDUSTRIAL—AGRICULTURAL—MUNICIPAL—RESIDENTIAL

A Type for Every Service

GOULDS PUMPS, Incorporated
SENECA FALLS, N. Y.

PUMPS

A New Flexible Coupling

Metallic coupling throughout—no springs, laminated bolts, grids or discs. All forms of shaft misalignment taken care of by means of loose fitting, floating keys with beveled sides. Made for all sizes of shafts.

Write for Bulletin 1026

W. H. NICHOLSON & CO. 129 Oregon St., Wilkes-Barre, Pa

MAGIC BOILER PRESERVATIVE

"The Pioneer Boiler Treatment"

Positively removes and prevents scale, stops minor leaks, pitting and corrosion

GARRATT-CALLAHAN CO.
310 South Michigan Avenue, Chicago

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ESTABLISHED 1904

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Steel Plate Construction

Steel Storage Tanks, Blast Furnaces, Gas Holders
Steel River Barges and Plate Work of all Kinds
Steel Transmission Towers

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General Offices, Pittsburgh, Pa.

Technical Association Papers, Series IX (1926)

IN PAPER, 384 PAGES. $3 PER COPY

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Vacuum Drum Washers
Code Comparison of Grinders
Lime Sludge Analysis
Wagner Stationary Recovery Furnace
Strength Tests for Sulphite Pulp
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Hardinge System of White Water Treatment
Chemistry of Wood Cellulose
Study of the Eastman Colorimeter
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Proceedings of the Annual Meeting

Write to THE PAPER INDUSTRY 356 Monadnock Building, Chicago, Illinois

terests who have projected a $30,000,000 pulp and paper enterprise at Prince George. It is expected that an early start will be made on the undertaking.

Isle Pierre, on the Nechako River, will be the site of a dam which will back up the river for many miles, and give a possible development of 100,000 horsepower, of which the initial unit, it is said, will be 50,000.

NEW BRUNSWICK

Fraser Acquires Coal Mine

The acquisition of the Minto Coal Co. properties by interests representing the Fraser Companies, Ltd., will give the pulp and paper manufacturers an abundance of coal for their mills in New Brunswick and Maine. The Minto Coal Co. gave an option on the coal mining holdings in the Grand Lake area to Welton-Henderson, Ltd., of Minto, in which Archibald Fraser, president of Fraser Companies, Ltd., is one of the leading figures.

Fraser Companies are the second pulp and paper manufacturing organization to go into the coal mining business in New Brunswick. The Nashwaak Pulp and Paper Co., operating a mill at Fairville, N. B., and two paper mills in Maine, has controlled one of the Grand Lake bituminous coal mining companies for a number of years, getting the coal supply for the mills from its own holdings.

David F. Brown, the grand old man of the paper-box industry in St. John, recently passed his ninety-first birthday anniversary at his home in that city. Forty-eight years ago Mr. Brown founded the D. F. Brown Paper Box. Co., the destinies of which he directed until six years ago. He then decided that, at eighty-five, the time was ripe for him to cease his business activities, and he delegated his son, C. Winter Brown, as his successor as head of the paper-box company.

No announcement has been made as to the time of reopening of the pulp mill of the St. George Pulp and Paper Co., at St. George, which suspended operations in January. This is the mill which rumor persistently links with Canadian International Paper. H. C. Howe, manager of St. George Pulp and Paper Co., has denied that International recently acquired the St. George mill, but the general opinion is that negotiations have been carried on with a view to the change in ownership.

Elmo Duas, 45, concrete finisher, was fatally crushed on the tunnel work at the Grand Falls hydro development last month when he was pinned beneath a carload of freshly-mixed concrete which jumped the rails and crashed down a twenty-foot embankment.

International May Build at Dalhousie

Negotiations in connection with the building of a newsprint mill by International Paper in New Brunswick have reached the stage where officials of the company and representatives of the town of Dalhousie have held a meeting to discuss terms in respect to taxation and other conditions under which the company would be willing to locate its mill at Dalhousie.

J. W. Brankley, the company's representative, stated he was very well pleased with the conference, and it is understood that a satisfactory understanding has been reached as regards the tax question. This, however, is only one of the factors which have to be determined, and the location of the mill has not yet been decided upon, nor has any decision been made as to when construction will be started.

NOVA SCOTIA

MacLeod Mill Closed

The closing of the MacLeod plant has been announced as permanent, and the reason is ascribed to the Tidewater Pulp

Fabroil (a General Electric product) is a compressed cotton fibre that does not deteriorate with age and is not subject to heat or cold, dryness or dampness.

That noisy waste of metal grating against metal is wholly unnecessary and is overcome by the use of Fabroil Gears and Pinions, which absorb vibration and shock in gear trains.

Fabroil noiseless gears are as strong as the best cast iron and cushion equally well with cast iron, steel or bronze mating gears. They can be run in a bath of oil.

We suggest and recommend Fabroil motor pinions be placed in your stock to avoid unnecessary and costly breakdowns that are bound to occur with short-lived non-metallic gears and steel pinions.

If you want ten years or more of unfailing service, Ganschow can promptly fill your exacting requirements with Fabroil Gears and Pinions.

William Ganschow Company

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Ganschow

There's *One* reason why they're better!

THE shaft bearings of WOOD'S Universal Giant Cast Iron Drop Hangers are adjustable in four directions either vertically or horizontally.

This distinctive feature makes it possible to align your shafting with the micrometric precision of a watchmaker —and assures a smooth running shaft that delivers maximum power under minimum friction.

This is only one of the many excellent reasons why you should specify WOOD'S Power Transmission Equipment.

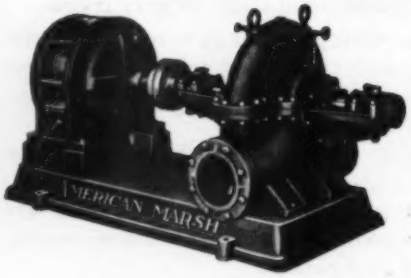
If you would be further convinced, send for our descriptive literature.

T. B. WOOD'S SONS COMPANY
CHAMBERSBURG, PENNA.

SEVENTY YEARS OF SERVICE 1857 W 1927

WOOD'S CAST IRON HANGERS

American-Marsh Paper Mill Pumps



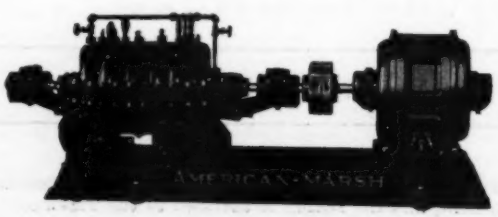
There is an American-Marsh Pump designed for practically every paper mill condition. The line includes:

Centrifugal Paper Stock Pumps
Boiler Feed Pumps — **Deep Well Engines**
Vacuum Pumps — **Ball Valve Pumps**
Air Compressors — **Centrifugal Pumps**
Suction Box Pumps

American-Marsh Pumps are a result of over forty years' experience in the manufacture of high grade pumping machinery. Located, as we are, in the heart of the largest paper manufacturing center in the country, we have always made a specialty of paper mill pumps and are in position to furnish the type of equipment especially adapted for your requirements.

There are over 200,000 American-Marsh Pumps in actual operation throughout the world.

Write us in regard to your requirements
Our Engineering Department is at your service



American Steam Pump Company

Battle Creek, Mich.

Chicago Office
828 Monadnock Block

New York Office
17 Battery Place

and Paper Co.'s refusal to continue taking the output of the plant, owing to an American concern's erection of a pulp mill in Quebec, from which it will obtain its requirements.

Liverpool Mill Almost a Certainty

Almost coincidentally with the closing of the Milton pulp mill, announcement was made of definite plans for the erection of a paper mill at Liverpool, four miles distant from Milton, and at the mouth of the Mersey River, on which the Milton mill of the MacLeod Pulp and Paper Co. is situated, the new plant to be put up by Ralph P. Bell and his associates. This mill would utilize the same water power and draw pulpwood from the same territory as that which has supplied the Milton plant.

A special meeting of the town council of Liverpool was called to consider the application of the Bell interests for certain tax exemptions, and the councillors were unanimous in the opinion that the request be granted. Mr. Bell had applied for a fixed taxation over a period of twenty years, and exemptions for improvements during that period.

A rider to the approval of concessions to the promotors provides that the plant shall be completed within two years, and the plans of Mr. Bell and his associates are taken as assurance that this provision will be complied with. The Liverpool mill is now regarded as morally certain of materializing, and it is expected that construction will be under way within the next few months.

The plant of the Clyde and Sissiboo Pulp Co., at Weymouth, which was crippled for several weeks owing to the breaking of waterpower wheels by ice, has resumed full capacity grinding, and will run day and night while the supply of water permits.

Canada Paper Takes Bear River Plant

Canada Paper Co. is reported to have exercised its option on the mill and timber limits of the Bear River Pulp and Paper Co., and to have closed a deal to purchase these holdings, with the intention of reopening the plant. While they had the option, Canada Paper caused a survey to be made of the Bear River timber limit, and the report of the cruisers is said to have accounted for a much greater stand of timber than was previously estimated.

The pulp mill at the mouth of the Bear River was erected by Clarke Bros., being completed in 1919. It was operated for some months, and in 1924 the Bear River Pulp Co. acquired the property. Construction by them of a five-mile pipe line, to the head waters of the Bear River, overcame the difficulty encountered by Clarke Bros. to get sufficient water for operation. The Bear River Pulp Co. operated the plant from December, 1924, until May, 1925, since which time it has been idle. The company went into liquidation in 1926, and since July of last year negotiations have been in progress for the sale of the holdings.

The Avon Power Co., which is planning on building a pulp mill at Windsor or Kingsport, has appointed Avard Bishop as electrical superintendent of the company's operations. There is no definite information as to when the erection of the mill will be started. Insofar as known, no final selection of a site has been made. Originally it was announced as the intention of the company to build at Windsor, where it operates a power plant. Later, several sites at Kingsport were investigated, which led to the conclusion that the company was undecided just where to build the mill. Prior to joining the staff of the Avon Power Co., Mr. Bishop was in the employ of the Cape Breton Electric Co., at Sydney.

Scott Paper Buys Nova Scotia Mill

Details were recently concluded in the purchase by the Scott Paper Co., of Chester, Pa., of the Nova Scotia Wood Pulp and Paper Co.'s property at Charleston, Queen's County, including a mill and extensive timber holdings. The deal involved $250,000.

A bill was passed in the Legislature amending the Nova Scotia company's charter to permit it to increase its borrowing powers, and extensions have been started to the mill, which, it is estimated, will cost about $500,000.

RYERSON

Immediate Shipment from Stock

Bars, Shapes, Structurals, Rails, Plates, Sheets, Rivets, Bolts, Nails, Wire, Chain, Turnbuckles, Shafting, Boiler Tubes, Boiler Fittings, Corrugated Sheets, Concrete Reinforcing, Welding Rods, Babbitt Metal, Tool Steel, Bar Iron, Refined Iron, Floor Plates, Safety Treads, Small Tools, Machine Tools, etc.

Write for the Journal and Stock List—the "key" to Immediate Steel.

JOSEPH T. RYERSON & SON INC.

Chicago Milwaukee Buffalo St. Louis New York Cincinnati Boston Detroit

STEEL

OHIO GREASE

INSURES PERFECT LUBRICATION

Ohio Cylinder Grease
Ohio Bearing Grease
Ohio Gear Grease

A complete line of industrial and automotive lubricants of exceptional quality. 89 kinds and consistencies. Let us show you how to get better lubrication for less money. No obligation.

Ask about our spare time agency proposition. It won't interfere with your regular work.

The Ohio Grease Co. Loudonville, Ohio

NO FELT MARKS—
With Fitchburg Felts

THE smooth, tightly-woven surface of all Fitchburg Cotton Dryer Felts insures paper free from felt marks.

¶ The finest papers—bonds, ledgers, fine writing—are made better and smoother when Fitchburg Felts are used.

¶ Manufactured in English weave, two, three, four, five and six ply, from 60 to 210 inches in width.

¶ Fine faced felts for fine papers. For coarse papers use "Triune" three-ply felts—they're dependable.

FITCHBURG DUCK MILLS
ESTABLISHED 1844
54 Duck Mill Road FITCHBURG, MASS.

Exclusive Makers of
Paper Makers' Felts

Lockport Felts

HAVE YOU RUN THEM?
IF NOT—WHY NOT?

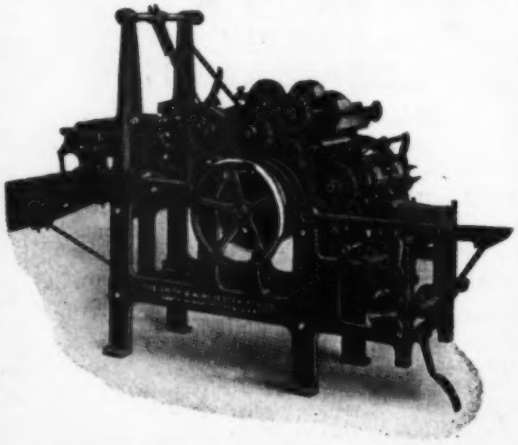
Are you interested in accurate running felts?

GIVE US A TRIAL
Get Authentic Information
Ask the men who run them

Yours for service
LOCKPORT FELT COMPANY
NEWFANE, NEW YORK

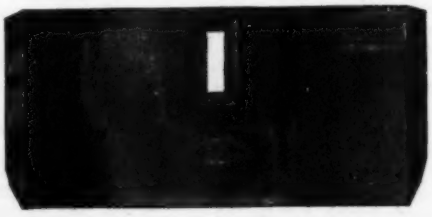
Established 1828
The
Smith & Winchester Mfg. Co.
SOUTH WINDHAM, CONN.

Manufacturers of
Paper Making Machinery



Paper Bag Making Machinery

SIMONDS
Barker and Chipper KNIVES



Tough steel of edge-holding quality, backed by expert workmanship, makes Simonds Knives the most serviceable for pulp and paper mills.

Write for Catalog and Prices

See page 393 in the 1928 Paper and Pulp Mill Catalog

Simonds Saw and Steel Co.
Established 1832 FITCHBURG, MASS.
Boston, Mass. Chicago, Ill.

NORTHERN NEW YORK NEWS

St. Regis to Plant Many Trees

The St. Regis Paper Co., through its superintendent of forests, Charles L. Van Schaick, announces that it will plant 1,500,000 trees this year on its Adirondack tracts and 5,000,000 each year thereafter. It is making the greatest contribution to reforestation on record in New York State, company officials declare.

The work was started in 1921, and since that time 5,186,000 trees have been planted, of which 150,000 have been killed by forest fires. The company operates its own nursery, producing 5,000,000 trees each year. The company owns great tracts of land suitable for forestry and intends to plant every acre.

Paper Companies Merge

The Utica Paper Co., Inc., has taken over the business of the Little Falls Paper Co., of Little Falls. James E. Mitchell is president and treasurer of the merged company, and William N. VanAllen, of Little Falls, is vice-president and secretary.

The new corporation will operate a sales office and warehouse in Albany in addition to the main office and warehouse in Utica. The company will add three salesmen to its force. making eight in all. It is factory representative for a number of northern New York paper mills.

Fort Edward Mill Progress

Work has been started to convert the Fort Edward mill of the International Paper Co. into a specialty plant. The new plant, which represents an expenditure of $2,000,000, will be ready for operation in less than a year. Approximately 800 men and women will be employed in the new plant. The mill was shut down several weeks ago, and about 400 men were laid off.

The plans contemplate the redevelopment of the hydraulic changes in the paper mill, steam plant and sulphite mill. It is planned to operate all six machines, as well as the number 7 machine, the wrapping paper machine. Additional equipment will be installed to handle stock and the finished product. Six machines will make specialty or bond and book paper. The seventh will make wrapping paper. In manufacturing the new product, magazine paper will be used, and equipment will be installed for sorting the stock, washing and bleaching it. The company's plans also include the use of the barge canal terminal, and the construction of a road from the terminal through the company's yards to the sulphite mill.

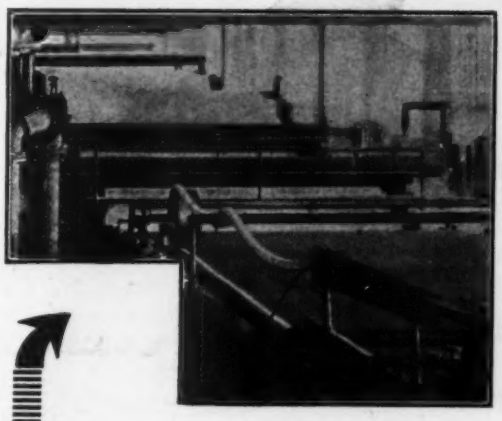
The survey made by the Black river regulating board gives assurance that there will be plenty of water to fill the storage reservoirs and insure a normal flow throughout the summer. While the depth of snow is not equal to that of last year, it is believed that there is enough to insure well filled reservoirs. The average depth of snow in the woods when the survey was made was 27 inches, which gives a water depth of 7.8 inches.

An improvement to a papermaking machine is covered in a patent issued to Charles W. Valentine, an officer of the Bagley & Sewall company of this city. The apparatus is for use in combination with a Fourdrinier paper manufacturing machine and is designed to cut the paper as it passes over the breast roll. Fourteen new claims for new features are allowed in the patent. Mr. Valentine has assigned the patent to the Bagley & Sewall company.

Chateaugay Mill Closes

The High Falls Pulp and Paper Co., operating a mill at Chateaugay, owned by the New York World, has closed down for an indefinite period. The closing order was received early last month.

While John S. Adams, the resident manager, said that he



Superior materials

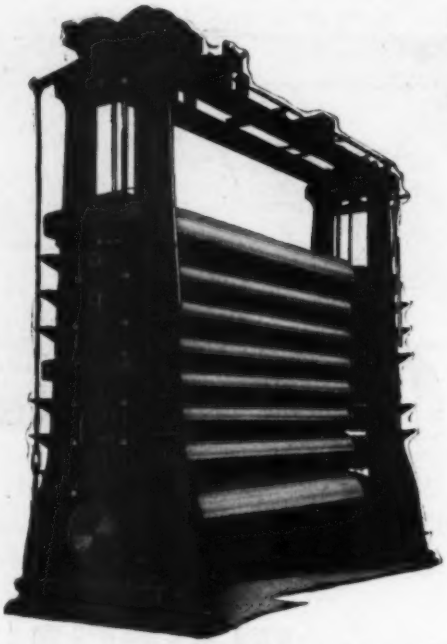
MADE of the best phosphor bronze or brass, the toughness and strength of Superior wires enable them to withstand the hardest usage for the greatest length of time.

Wires and facings for

Fourdriniers, Harpers and Yankees
Cylinder Machines and Wet Machines
Thickeners, Deckers and Save-alls

The Wm. Cabble Excelsior Wire Mfg. Co.

74-88 Ainslie St.
143-151-163 Union Ave. Brooklyn, N. Y.



LOBDELL

CHILLED IRON ROLLS
AND
MACHINE CALENDER STACKS

Specified on your new machines or for the new rolls for your old stack insure rolls of maximum hardness and perfect finish.

Calender Stacks are equipped with Electric Motor, Hydraulic, or Ratchet Lift all operated from the floor.

Improved Oiling Systems can be furnished either completely circulating with oil filter and sight feed or closed end ring oiling boxes or a combination of both.

Ask for your copy of our treatise on the Care and Upkeep of Paper Mill Rolls.

LOBDELL CAR WHEEL COMPANY
Established 1836
WILMINGTON, DELAWARE.

THE WATERBURY FELT CO.
SKANEATELES FALLS
New York

FELTS and JACKETS

Top and Bottom Wet Felts for board machines, with all the qualities requisite to insure long life and continuous production.

They Satisfy

Is Felt Economy a Problem to You?

Let Us Show You How to Solve It

It's the type of roll that holds the answer—
and it's the kind of roll we furnish

STOWE & WOODWARD CO.

The Rubber Roll Makers **Newton Upper Falls, Mass.**

was in hopes that the mill would reopen, he could promise nothing definite. Underselling by Canadian newsprint manufacturers is given as the reason for the shut-down.

The mill employed about 75 hands, and the payroll was $2,000 a week. It began operations as a pulp mill 30 years ago, and ten years ago the paper mill was opened, and both mills have been operated by the New York World.

Edward B. Sterling, president of the West End Paper Co., has been seriously ill in Florida, where he has been spending the winter at Winter Park. Although for a time he was in a critical condition, he is better now and expected to recover. He expected to return north as soon as the weather permitted.

St. Regis to Build Pulp Mill

Work will be started this spring on a new pulp mill at Raymondville by the St. Regis Paper Co. The new mill, which is one of the Hanna group of the Carlisle system, will have nine four-pocket grinders, each on three lines. All lines will have electric motors.

New stone units and grinders will be added to the mills at Norfolk and Norwood. Ground wood at the East Norfolk mill will be discontinued. Hydro-electric development of power in part for use by the mills on the Racquette River will take the place of pulp grinding.

H. E. Harmond, H. S. Lewis and Jacob F. Amos have been elected directors of the Black River Power Association. H. P. Gould, head of the Gould Paper Co., was elected vice-president.

George W. Knowlton, president of Knowlton Bros. Co., was painfully injured at Key West, Fla. Mr. Knowlton stepped into an elevator, not noticing that the elevator floor was two feet below the level of the doorway, and was pitched forward, striking his head. His straw hat broke the force of the fall.

Oi Takata, chief engineer of the Oji Paper Co., of Japan, spent several days last month inspecting the plant of the Bagley & Sewall Co. He visited other mills in this section as well as in Canada. The Bagley & Sewall Co. has constructed 14 machines for the Oji mills.

The Taggart Bros. Paper Mill in Watertown was forced to shut down for a few days last month on account of high water.

Philip Ryan, for seven years boss machine tender at the St. Regis mill at Deferiet, has gone to Gatineau, Ont., where he will be employed by the International Paper Co.

A new dam has just been completed at Dexter by the Dexter Sulphite, Pulp and Paper Co. The dam, which is built of concrete, is capable of developing 1,000 horse power. Twin generators are employed.

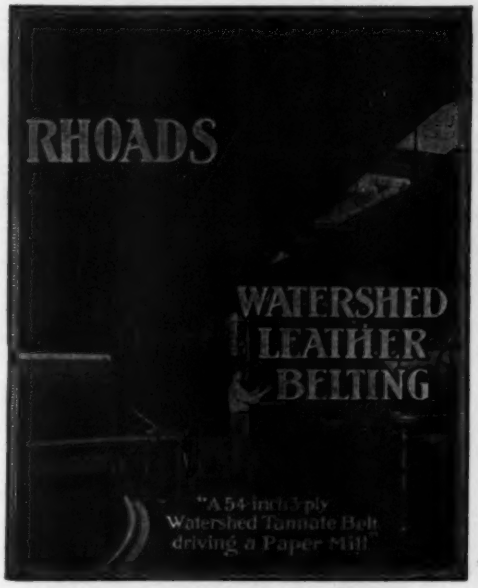
Joseph Wright, formerly of the Champion Paper Co., of Carthage, has been named general manager of the Mohawk Paper Makers, Inc., with mills at Cohoes and Waterford.

Wage Conferences

Wage conferences are now being held in various parts of northern New York, following the meeting of the International Brotherhood in Albany.

There was no demand for a general pay boost at the meeting, but the wage scale committee recommended a continuation of the 1926 scale with some revisions. The lower paid men would receive some increase, the higher paid men waiving their demands. Representatives of practically all the larger paper companies were present at the conference with the exception of the International Paper Co.

Those present were: James T. Adams, Manning Paper Co., Inc., Troy; C. H. L. Jones, vice-president and general manager of the Spanish River Pulp and Paper Co.; L. J. Parant, vice-president and general manager of the St. Croix Paper Co., Woodland, Me.; A. E. Charlton, general manager of the DeGrasse Paper Co., Pyrites; E. B. Murray, vice-president and general manager of the Union Bag and Paper Co.; E. S. Catlin, vice-president and general manager of the Pejepsecot



Paper Mill Economy

Give Tannate Watershed a Chance in Your Mill

A LARGE corporation with paper mills in New York state and in Wisconsin, bought their first Tannate Watershed Belts in July, 1925. Now they have nearly $3,000 worth in service.

They have long been users of rubber belting, but a year after the first installment of Tannate, they reported, "We are highly pleased with the performance of these belts, so far, and think you may reasonably expect to be called on for more of this material."

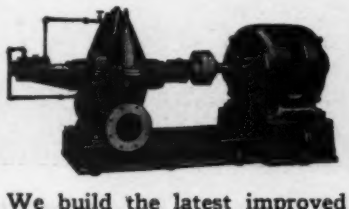
A recent report refers to the satisfactory service of Tannate Watershed on beaters and re-winders, and a cross-belt on a Jordan. Special emphasis is given this 13-inch Jordan belt. It replaced 14-inch, 8-ply rubber which seldom lasted six weeks. The Tannate has been on six months, runs fine, and shows no perceptible wear.

It certainly pays paper mills to use Rhoads Tannate Watershed Belting.

J. E. RHOADS & SONS

PHILADELPHIA.....47 North Sixth Street
NEW YORK.....112 Beekman Street
CHICAGO.....334 West Randolph Street
ATLANTA.....80 South Forsyth Street
CLEVELAND.....1234 West Ninth Street

Factory and Tannery: Wilmington, Del.



High Efficiency Centrifugal Pumps

We build the latest improved types for every pumping requirement in paper and pulp mills.

Write for Catalog

Lawrence Pump & Engine Co.

P. O. Box 70B LAWRENCE, MASS.

Longcrimp
Fourdrinier
Wires

USED EXTENSIVELY ON
Kraft, Wrapping and Newsprint Machines

Give Longer Average Service than the Regular Weave

Made By

The Lindsay Wire Weaving Company
(Collinwood Station) CLEVELAND, OHIO

See page 363 in the 1926 Paper and Pulp Mill Catalogue

BARRE GRANITE IN PRESS ROLLS

Is Revolutionizing the Whole Paper Making Industry

If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. **BOSTON, MASS.**

Paper Co., Brunswick, Me.; J. R. Booth, of the J. R. Booth Co., Ltd., Ottawa; J. E. Patterson, general manager of the Abitibi Pulp and Paper Co., Iroquois Falls, Ont.; W. L. Mead, assistant general manager of the Consolidated Water and Paper Co., Wisconsin Rapids; Warren Curtis, president of the Ontario Paper Co., Thorold, Ont.; William M. O'Brien, secretary of the United Paper Mills, Inc., Potsdam; F. C. Bagley, general manager of the Cushnoc Paper Co., of Augusta, Me.; George Walker, general superintendent of the Finch Pruyn Co., Glens Falls, and S. W. Backus, vice-president and general manager of the Kenora Paper Mills, Ltd., Kenora, Ont.

It was decided to ask the manufacturers to include New Year's day as one of the days when mills should not be run. A resolution was adopted favoring the 40-hour week.

The Newton Falls Paper Co. has started work on a large power dam which will store up water for use during the dry season.

Soviet Visitors Buy German Machines

The Soviet officials who inspected the plant of the Bagley & Sewall Co., in Watertown with the idea of placing an order for papermaking machines, have ordered them from a German concern.

The officials who inspected plants in this country several months ago represented the Centrobumtrust, Russia's central paper trust and Soviet union. Although the contract, if placed here, would represent several million dollars, it is said that a firm in this country could not compete with the terms given by the German manufacturers and guaranteed by the German government.

The Soviet government has planned to build a 150-ton mill on the Volga River and a 150-ton sulphite mill in connection with it.

NEW YORK CITY NEWS

Government Investigation

Hearings on charges that wholesale paper dealers and converters who are members of the Allied Paper Bag and Twine Jobbers' Association of Greater New York, Inc., exercises a monopoly or combination in restraint of trade and that they control prices of paper bags, tissue paper and other paper and paper products have been conducted before Referee Anthony P. Ludden in the offices of the New York State attorney general in this city very recently. William B. Groat, Jr., deputy attorney general, has directed the investigation on behalf of the Government.

The order calling for members of the association to appear before the referee to testify concerning the alleged violation of the General Business Law, commonly known as the Donnelly Anti-Trust Act, was signed by Supreme Court Justice Ford. Members of the association specially named in the petition for the order are the Active Paper Co., Inc., American Paper and Twine Co., Amsterdam Paper Co., Bronx Paper Bag and Paper Co., Fair Deal Paper Co., Inc., Grand Bag and Paper Co., Inc., Globe Paper and Twine Co., Harlem Paper Products Co., Quality Paper and Twine Co., West Side Paper Co., Weitzman & Son Co., Inc., Jefferson Paper Co., Isidor Melnick, and the Gotham Tissue Corp.

Testimony of witnesses alleged that the association fixed prices at which paper and paper bags were to be sold, and that when certain concerns refused to adhere to the dictation of the organization and its members, they were unable to get merchandise. Several jobbers testified they were forced out of business by the operations of the association. On the other hand, Isaac Horowitz, secretary of the association, testified that the organization was only an association of dealers working for their mutual benefit and that it had not violated the law in any way.

The Southern Pulp and Naval Stores Co., of Columbus, Ohio, has purchased the Atlantic Paper and Pulp Co., of Fort Wentworth, Ga., the Bank of America in New York recently announced. The price was not stated, but the bank stated

Time saved in cleaning is money earned

THE less time out for cleaning equipment, the more time available for profitable production. Cleaning today must be fast—dependably fast—must contribute to, not retard, steady uninterrupted operation.

Such cleaning can be obtained with OAKITE —and *only with* OAKITE. For OAKITE methods are unique in that they substantially reduce the time necessary for washing felts, cleaning cylinder rolls, Fourdrinier wires, screens, sieve cloths, and other paper mill equipment. Felts, for instance, can be washed *on the machines*—while in operation —in a fraction of the time required with other materials.

For complete information about economical, time-saving OAKITE cleaning methods, write us. No obligation.

OAKITE IS MANUFACTURED ONLY BY

OAKITE PRODUCTS, INC., 16A Thames St., NEW YORK

(Formerly OAKLEY CHEMICAL CO.)

Oakite Service Men, cleaning specialists, are located at

Albany, Allentown, Pa., Altoona, Pa., *Atlanta, Ga., Baltimore, *Birmingham, Ala., *Boston, Bridgeport, *Brooklyn, Buffalo, Camden, Charlotte, N. C., *Chicago, *Cincinnati, *Cleveland, *Columbus, O., *Dallas, *Davenport, *Dayton, *Denver, *Des Moines, *Detroit, Erie, Pa., Flint, Mich., Fresno, Cal., *Grand Rapids, Harrisburg, Hartford, *Indianapolis, *Jacksonville, Fla., *Kansas City, Little Rock, Ark., *Los Angeles, Louisville, Ky., Memphis, Tenn., *Milwaukee, *Minneapolis, *Montreal, Newark, Newburgh, N. Y., New Haven, *New York, *Oakland, Cal., *Omaha, Neb., *Philadelphia, *Pittsburgh, Portland, Me., *Portland, Ore., Providence, Reading, *Rochester, Rockford, Rock Island, *San Francisco, *Seattle, *St. Louis, South Bend, Ind., Springfield, Ill., Syracuse, *Toledo, *Toronto, *Tulsa, Okla., Utica, *Vancouver, B. C., Williamsport, Pa., Worcester.

*Stocks of Oakite materials are carried in these cities.

OAKITE

TRADE MARK REG. U.S. PAT. OFF.

Industrial Cleaning Materials and Methods

FOUND—$121.76 PER DAY!

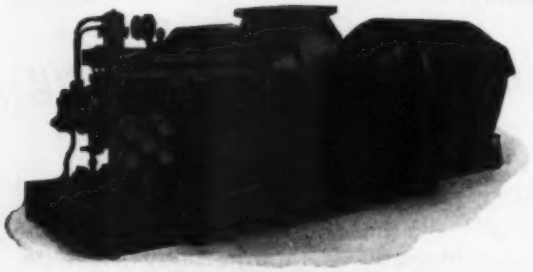
WITH A

MOORE

"Best at every turn"

MIXED PRESSURE BLEEDER TURBINE

AT THE BEACON OIL CO., EVERETT, MASS.



750 Kw. Moore Mixed Pressure Bleeder Turbogenerator

Engineering details of this remarkable installation—with all operating data in the form of a Nielsen Survey—is yours for the asking.

Send for it

This 750 KW Moore unit is actually making possible the saving of $121.76 per day in the cost of steam alone. It is an especially designed turbine fitted to the actual requirement. By effecting a perfect heat balance it eliminates a waste in steam amounting to $121.76 per day.

Power becomes a "by product."

Any plant using process steam and electrical power can doubtless be greatly benefited by a study of the methods used in this installation.

Our engineers will gladly co-operate with you.

Offices in all principal cities

MOORE STEAM TURBINE CORPORATION

Wellsville, New York

In Canada Ontario and East—General Supply Co. of Canada, Ltd., Ottawa Manitoba and West—Darling Bros., Ltd., Montreal

Give the wrench a rest

Fig. 106 Screwed Jenkins Standard Bronze Globe Valves

Give the repairman's wrench a long-deserved rest by installing Jenkins Valves. Trouble-free service is the rule in Jenkins-equipped plants throughout the country.

Jenkins Valves are made for long-term low-cost service. Well made from metals proved by analyses, they are designed to provide strength where strength is needed. And every valve, before it leaves the Jenkins factory, must pass a test in service under pressures considerably highly than those for which it is recommended.

At supply houses everywhere.

JENKINS BROS.

80 White Street .....New York, N. Y.
524 Atlantic Avenue .....Boston, Mass.
133 No. Seventh Street....Philadelphia, Pa.
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JENKINS BROS., Limited
Montreal, Canada London, England

Always marked with the "Diamond"

Jenkins Valves

SINCE 1864

The Davis Pressure Regulator is constructed so as to save in upkeep cost as well as in the cost of steam

WHEN an industrial engineer insists on Davis valve specialties, you can rest assured that he expects to make a favorable showing on the profit sheet. He's cutting corners on both first and ultimate costs.

G. M. DAVIS REGULATOR CO.
422 Milwaukee Avenue Chicago, Illinois

DAVIS VALVE SPECIALTIES

STEAM-SAVERS SINCE 1875

VALVE MAKERS FOR OVER FIFTY YEARS

P14-Gray

the new owners will build a kraft paper mill on the property which would give them an investment of about $500,000 there. The Southern company obtained an option on the Atlantic plant during January which it decided to exercise just a short time ago. A contract of sale has been agreed upon and the transfer of the property will be made shortly.

International's Earnings Increase

The International Paper Co. and subsidiaries, with principal offices in New York, report net earnings for the eleven months ended November 30, 1926, as $2,867,026, after interest and depreciation, but before Federal taxes. This sum is equal, after preferred dividends, to $1.70 a share earned on 500,000 outstanding shares of common stock. The figures compared with net earnings of $2,550,301 after all charges and taxes in the full year 1925, equivalent after preferred dividends to $1.14 a share earned on 500,000 shares.

The income account for the eleven months shows gross sales of $54,322,690, total revenue of $8,883,978, depreciation of $3,605,939, and interest of $2,411,013. After preferred dividends of $2,015,197 and common dividends of $583,334, the surplus before Federal taxes was $268,496. The surplus for 1925, after taxes and preferred dividends of $1,979,019, was $571,282.

Colonel William H. Eaton, who long had been treasurer of the Eaton, Crane & Pike Co., paper merchants of 1 Park avenue, New York, resigned that office and was elected to the presidency of the company at the annual directors' meeting on March 24. Charles C. Davis was made executive vice-president to assist him. Robert E. Kimball, formerly assistant treasurer, is now vice-president and sales director, and Arthur E. Stratlin, also formerly assistant treasurer, is treasurer. Arthur W. Eaton, founder of the company and its president since its inception, was elected chairman of the board of directors.

To Dissolve O'Meara Company

From all indications, it has been decided to dissolve the firm of Maurice O'Meara Co., of 450 Pearl street, New York, one of the oldest and best known paper-jobbing concerns in the metropolitan area for which receivers were appointed some little time ago.

Maurice O'Meara and William O'Meara, former officers of the company, are reported to have accepted positions with other firms in the paper trade, and an order signed by U. S. District Judge Thacher instructs the defendant company and its creditors to appear at a term of the court to show cause why an offer of the Walker, Goulard, Plehn Co., Inc., to purchase all the merchandise, furniture and fixtures of the O'Meara Co., for the sum of $36,372 should not be accepted. Morris Gintzler, of the Pulp and Paper Trading Co., New York, and Alfred C. Cox, an attorney of 128 Broadway, New York, are receivers for the company.

According to an announcement made here lately by A. B. Martin, executive vice-president of the Crown Willamette Co., with main offices in San Francisco and mills in Oregon and Washington, that company has signed a contract with William Randolph Hearst to supply the entire requirements of Mr. Hearst's Pacific coast newspapers for newsprint over a 10-year period. The total amount of the contract is said to be in excess of $150,000,000.

Noble & Wood Installations

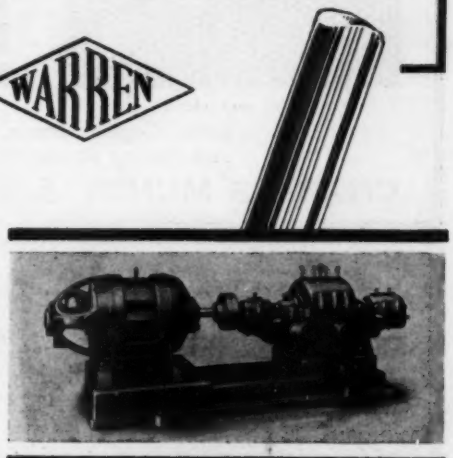
It is interesting to note that recent installations show that 40 of the latest type Noble & Wood precision jordans have found a home at the Champion Paper Co.'s mills at Hamilton, Ont. The mill is also equipped with 10 Noble & Wood pulping engines.

The Consolidated Paper Co. recently completed a new board mill at River Rouge, Mich., and have installed three Noble & Wood Type D Monarch jordans for the refining of the stock. Their equipment also includes two Noble & Wood Type D board machines.

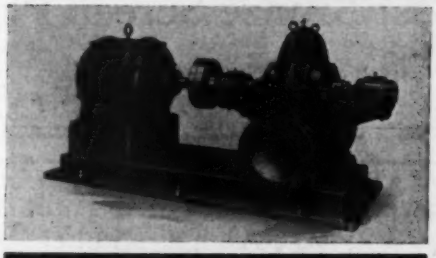
Walter Werner, chief engineer of the Noble & Wood Machine Co., recently returned from a visit to the Celotex Co. mill at New Orleans, La., where he observed the performance of two Noble & Wood jordans installed there for the purpose of refining coarse fiber used in Celotex insulating board, the character of which is decidedly different than most material jordans are required to refine.

For Every Pipe Line WARREN PUMPS

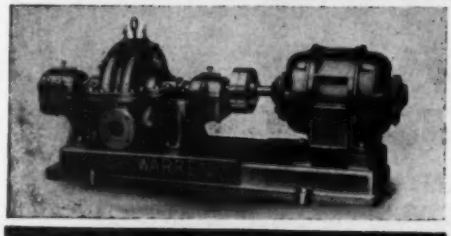
WARREN



Four - Stage Pump for Boiler Feed or High Pressure Service



Single - Stage Double Suction Pump



Two-Stage Single Suction Pump

There is a Warren Pump for every service in your mill. And each one is designed, built and tested to give you the lowest operating and maintenance cost per year of service.

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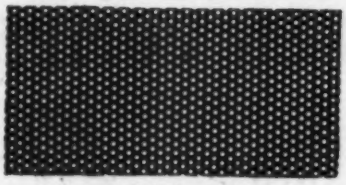
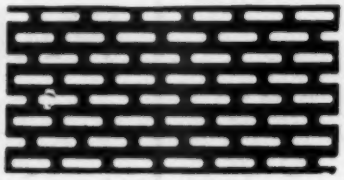
817

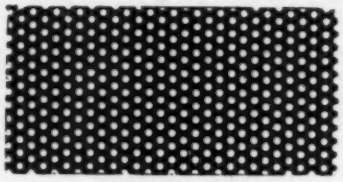
Perforated Metal Screens for Pulp and Paper Mills



.065 inch round



⅛ x ½ inch Slots



3/32 inch round

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Cast Bronze Screen Plate

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Power and Endurance Built into QUAKER Rubber Belts

Made to withstand extreme heat and moisture, the strain of sudden stopping and starting, and overloads in paper mills.

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(Best phosphorized Cast Metal)

Old Plates RECLOSED and RECUT to accurate gauge

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Immediate Delivery of the Largest Orders. Satisfaction Guaranteed

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For all types and sizes of boilers

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Complete installations designed and erected

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THE JOHNSON FRICTION CLUTCH

JOHNSON Clutches are splendidly adapted for any light-powered paper machine built. Compact. Powerful. Amazingly long life.

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Equip your paper machines with the high quality, dependable, JOHNSON Clutch. Used on thousands of paper working machines.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

Waste Dealers Hold Convention

The fourteenth annual convention of the National Association of Waste Material Dealers, Inc., whose membership includes practically all of the large concerns in the country handling paper mill supplies, was held on March 15 and 16 in the Hotel Astor, New York. There was a large attendance of dealers from various parts of the United States and Canada.

The first day of the convention was devoted to meetings of the several divisions of the association, including the Paper Stock Division, the Waste Paper Division and the Foreign Trade Division. David Charak, of the Federal Paper Stock Company, St. Louis, was elected chairman of the Paper Stock Division for the ensuing year; Robert F. Graham, of P. H. Graham & Sons, Inc., Boston, was re-elected chairman of the Waste Paper Division, and Jesse W. Long, of S. Birkenstein & Sons, Inc., New York and Chicago, was re-elected chairman of the Foreign Trade Division.

At the annual general meeting of the association on the following day, George H. Rady, of the E. J. Keller Co., Inc., New York, was elected president of the organization, succeeding Egmont L. Frankel, of Toronto, Can. Almost 600 members and guests attended the annual banquet in the Grand Ballroom of the Astor on the evening of March 16 at which United States Senator M. M. Neely, of West Virginia, was the principal speaker.

The entire twenty-seventh floor of the new French Building on the northeast corner of Fifth Avenue and Forty-fifth Street, New York, has been leased by the Perkins-Goodwin Co., paper and pulp merchants and importers who for the last 14 years have occupied offices in the Aeolian Building at 33 West Forty-second St. The company will move into its new quarters shortly. The English China Clays Sales Corp., now in the Aeolian Building, also has leased a suite of offices in the new French Building on the twenty-second floor.

M. Gottesman & Co., Inc., of 18 East Forty-first St., New York, are announcing to the trade their appointment as exclusive selling agents in the United States of the Rechberg bleached and unbleached sulphite pulps. The Rechberg mill is one of the foremost Austrian manufacturers and produces pulp which is very much preferred among Continental consumers. M. Gottesman & Co. also represent in this market a number of large Scandinavian and Continental producers of bleached and unbleached sulphite, kraft pulps and ground wood, and operate the M. Gottesman & Co., Aktiebolag, of Stockholm, Sweden, for a closer association with their numerous European connections.

The American Cordage & Paper Co., Inc., of 37 West Nineteenth St., New York, filed schedules in bankruptcy on March 15 showing liabilities of $58,818, and assets of $16,850, main items of which are assigned accounts of $11,800 and stock valued at $5,000.

The Lincoln Paper Co. has been organized to conduct a general paper distributing business with offices at 2 Lafayette St., New York. The officers of the new company are Charles A. Rohlfs, president; James A. Burke, vice-president, and James A. Tracy, treasurer, all of whom formerly were connected with the Maurice O'Meara Co.

The Diana Paper Co., of Harrisville, N. Y., filed a voluntary petition in bankruptcy on March 7. Judge Cooper named D. B. Schuyler, president of the Jefferson County National Bank of Watertown, receiver. The company's bonded indebtedness amounts to $300,000, and unsecured claims aggregate about $240,000. Assets are roughly estimated at about $200,000.

Recent new members elected to the Merchants Association of New York include Louis T. Stevenson, paper dealer of 441 Lexington Ave., New York; Peter J. Schweitzer, Inc., manufacturer and importer of tissue papers of 200 Fifth

Frederick
Centrifugal
Pumps
The First Real Stock Pump

Single-Suction Standard Paper Mill Stock Pump

Until the advent of Frederick Paper-Mill Pumps, designed specifically for handling stocks of high consistencies, paper-mills were dependent upon the old type fan pumps to move their stock. These pumps moved it—but at a power consumption that was excessive. Today they are rapidly being replaced, except where it is necessary to handle stock containing strings, rags, clips, etc.

Frederick Stock Pumps, which caused this change, still hold the position of leadership in paper-mill service which they thereby won. Moreover, the ever-growing demand for more Frederick Pumps from the hosts of paper-mills that are already using them, indicates that this position is being very well consolidated.

Our Standard Stock Pump handles stocks of consistencies up to 4% with excellent efficiency. Our Super-Stock Pump will efficiently handle 6% stock.

There is a Type of Frederick Pump Suitable to Every Need of a Paper-Mill

The Frederick Iron & Steel Company
Frederick, Maryland
In Canada:
Dominion Engineering Works, Ltd., Lachine, Que.

FOR SALE

Complete Equipment for a 20-Ton Sulphate Mill as follows:

1 82" Chipper with Chain Bucket Conveyor.
2 Digestors with Pumps and Heaters arranged for indirect Cooking.
6 Defusers.
1 Knot Catcher.
1 Two Press Rogers Wet Machine with necessary Pumps.
2 Black Liquor Tanks.
1 Smelt Furnace.
6 Causticizing Tanks with necessary Pumps.
1 Fan Blower for Furnace Work.

Everything is in good shape and nearly as good as new, for immediate delivery, reasonable price

Gibbs-Brower Co., Inc.

Paper and Pulp Mill Brokers

261 Broadway, New York City 166 W. Jackson St., Chicago

Our Motto: *"SERVICE FIRST"*

Sideline Men can make money selling our JIC liquid paste to paper bag manufacturers, paper products and paper converting companies. JIC paste is endorsed by the machine companies who make paper bag machines, and all these machines are tested out with JIC before being shipped from their factory. JIC is a big repeater. Write for samples, testimonials and terms. Address JIC DEPARTMENT, Jasmine Ink Corporation, Norfolk, Va.

TO BE OFFERED FOR SALE

Pynetree Paper Company

Gordon, Georgia

PAPER and PULP MILL

Pulp Mill

Consists of a one unit pulp mill. (Sulphate.)

Consists of— **Paper Mill**

1 six-cylinder Downingtown 110" trim machine with sixty-one 42" diameter dryers.
1 60" trim Fourdrinier machine 32 dryers.
1 Rogers wet machine 30 dryers.

All three machines fully equipped for operation. Sufficient Beater and Jordan capacity.

Power
Steam and Electric.

Tenant Houses
Fifty-five for employees.

Wood and Water
In abundance.

Healthy Location
Climate conditions good. Can operate the year round.

Labor
Both in quality and quantity has always been available.

Locality
Located on main line Central of Georgia Railroad Company.

Trackage
Ample track facilities on yard of mill.

Sprinklered Risk

For further information, write Jas. N. McCaw, Trustee, Gordon, Ga.

FOR SALE—Second-hand 1200 lb. wood tub N. & W. beater. In good condition. The Noble & Wood Machine Co., Hoosick Falls, N. Y.

CUTTING MACHINE WANTED—Modern type, size about 60 inches. Must be in good condition. Possession within reasonable time. Address, National Printing & Engraving Co., 7 S. Dearborn St., Chicago, Ill.

WANTED—Black-Clawson pasting machine complete, or driers for same. Most desirable size 48" diameter, by 52" face. Advise lowest cash price. Write Box 124, The Paper Industry.

WANTED—Job as Assistant or Superintendent. Thoroughly experienced on Bonds, Cards, Book, News or Kraft. Conservation of clothing and production. Energetic, NOT afraid of work. Address Box 125, The Paper Industry.

MACHINE TENDER WANTED—Experienced machine tender for Yankee machine wanted. Machines make tissue, Kraft and Sulphite Wrapping papers and Bag paper. When writing state fully your experience. Address Box 121, The Paper Industry.

WANTED—Paper mill to be converted into special use, if price right will buy for cash or owner may retain part interest. If you have an idle mill, or one that is not earning what you think a just return write us. Idle mill equipment needed also. Give full particulars. Address Box 126, Paper Industry.

PAPER MACHINES FOR SALE

In good condition Immediate Delivery

One—2-cylinder machine. 2 presses; 10 dryers, 42"x84"; one calender; reel; single drum winder; marshall drive.

One Fourdrinier machine. Wire 96"x50'. 2 presses; 15 dryers, 48"x94"; one calender; reel; two drum winder; marshall drive.

By:

FRANK H. DAVIS COMPANY

175 Richdale Avenue, Cambridge, Mass.

Ave., New York, and the Pulp Bleaching Corp., of 39 Cortlandt St., New York.

The J. J. Murphy Associates, of New York City, has been incorporated under New York State laws to deal in paper with a capital of $100,000 by J. J. Murphy, M. Miller and B. L. Miller.

Ivan Sorvall, formerly with the Perkins-Goodwin Co., of New York, is now associated with the E. M. Sergeant Co., Inc., wood pulp importers of 501 Fifth Ave., New York.

The financial report of the Robert Gair Co., manufacturer of paper board and containers, with principal offices in New York City, shows net income of $1,027,235 for 1926, after charges, taxes and depreciation, equivalent, after 7 per cent preferred dividends, to $1.65 a share earned on 475,000 shares of no par common stock. This compares with $1,307,276, or $2.27 a share, earned on 467,132 shares in 1925. Gross profit was $3,708,198, against $3,893,737 in 1925, and operating profit was $1,907,556, against $2,200,865. The surplus after dividends was $549,733 in 1926.

William A. Gray

William A. Gray, president of the Gray Envelope Manufacturing Co., and a pioneer merchant of the Bush Terminal in Brooklyn, N. Y., died at his home in Summit, N. J., on March 15. He was in his fifty-third year, and for years had lived in Brooklyn.

Mr. Gray founded the General Paper Goods Manufacturing Co., of Newark, N. J., in 1910, and a year later transferred the business to the Bush Terminal. In 1917 he established the Gray Envelope Manufacturing Co., and for several years had served as president of the Merchants and Manufacturers Association of Bush Terminal.

A. G. Stone, superintendent of the Menominee division of the Marinette and Menominee Paper Co., Marinette, Wis., one of the subsidiaries of the Continental Paper and Bag Mills Corporation, has been called East to act as plant superintendent and production manager of the corporation's largest plant, the Rumford Paper Division at Rumford, Me., commencing April 1, 1927.

Lawrence Machine and Pump Co., Lawrence, Mass., recently destroyed by fire, have contracted for the rebuilding of their plant at Lawrence, Mass., and will increase their capacity besides having greatly improved facilities, with new machine tools of special design for the manufacturing of the old and well known Lawrence Pump. They expect to resume operation June 1, and will be pleased to hear from their many customers.

Effective April 9, Hercules Power Co. announced F. Wood Rosin prices at $8.75 f.o.b. southern shipping points.

POSITION WANTED—Assistant Manager in modern book mill desires position as manager. Confidences exchanged. Address Box 128, The Paper Industry.

Sales Engineer Wanted

A well-established and progressive manufacturing engineering firm desires a man with reasonably thorough experience in paper manufacture, particularly one having special knowledge of screening and reducing white water losses. To be fairly young, preferably not over thirty, and technical education very desirable though not necessarily essential. Required to sell and supervise installation of a comparatively new line of heavy equipment which is rapidly coming into widespread use. No previous sales experience necessary provided man has agreeable and convincing personality. Position involves considerable traveling in Canada and United States and man selected will have every opportunity for advancement. Write fully, including age, nationality, education, past experience, reference, etc.

All replies regarded confidential. Box 127, Care The Paper Industry

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BURLINGTON, IOWA

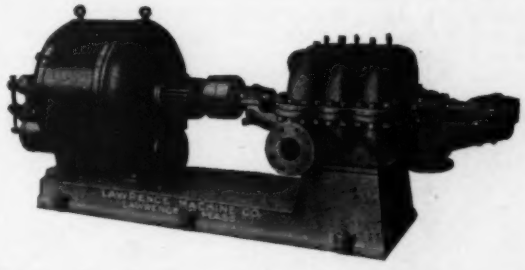
Successful Builders for 56 Years

of **BOILERS** *and* **ENGINES**

PLEASE SEND US YOUR INQUIRIES

Engines	*Boilers*
CORLISS	INTERNAL - FURNACE
PUMPING	TUBULAR
UNA - FLOW	WATER - TUBE

Our Engine and Boiler Shops are quite independent of each other. ¶ And we Specialize on Boilers the same as we Specialize on Engines.



LAWRENCE multi-stage high pressure pumps for boiler feed and water supply service, to meet all conditions where reliability and economical operation are an essential factor.

Our many years of experience designing and building pumps backed up by unlimited capital and modern facilities places us in the front rank as pump builders.

Some of our competitors try to imitate, but none can equal.

Write the Lawrence Machine Co., for complete details and prices. Free engineering service.

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Office and Works, 361 Market St.
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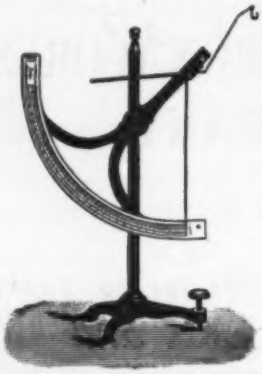
Manufacturer of "Lawrence" Pump, Centrifugal Pumping Machinery, Vertical Steam Engines, Contractors for Special Machinery

SCHOPPER

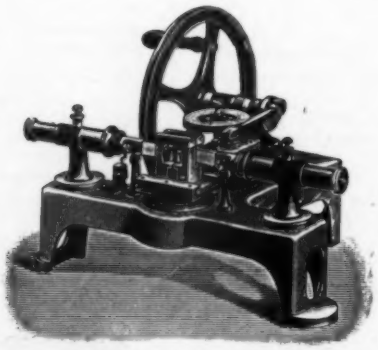
World Standard Paper Testers



No. 377—Small Piece Desk Scale
18 in. high, 12 in. wide. Gives basis weight per ream 24x36—480 and 500 sheets, by weighing small pieces, 4x4 or 2x4 in.

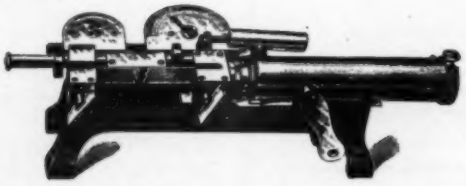
No. 367—Full Sheet Paper Scale
22 in. high, 15 in. wide. Standard scale for giving actual weight per ream. 480 and 500 sheets in size weighed. Graduated ½ lb. up to 125 lbs.

The Schopper Standard Desk Micrometer
Carried in stock—1/1000 of an inch for Boards, 1/2000 of an inch for Paper.



Schopper Folding Tester
The folding test has become standard for bonds, ledgers, and Kraft papers.

Small Piece Pocket Paper Scale
By weighing a piece 2 in. by 4 in., gives basis weight 25x38, 24x36, 22x34, 500 sheets.



Rapid Strength and Stretch Tester

Schopper Strength and Stretch Tester

FOREIGN PAPER MILLS, Inc.

Sole Agents

72 DUANE STREET, NEW YORK

Warehouses: NEW YORK—MONTREAL

Write for Booklet on Paper Testing Instruments No. I-100

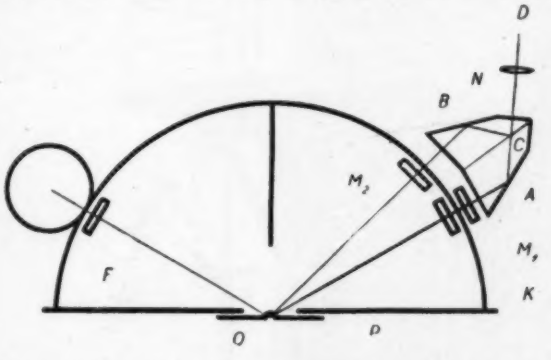
Technical Developments in the Paper Industry

Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Measuring the Luster of Paper

THE usefulness of paper and hence its value are influenced in two ways. First the quality of the fibers will of course have a potent effect in this connection, and then again the nature of the surface of the paper is also important, for this can differ markedly while the quality of the fibers remains unchanged. It is thus evident that a numerical representation of the surface conditions of paper would be of great



aid in practical work. The various apparatus which is used for this purpose depend on the casting of light rays from a definite source of light on the paper surface being investigated and at a definite angle thereon, and the measurement of the intensity of the distribution or condition of polarization of the light that is cast back by the surface of the paper. The difficulties that have arisen in the practical application of these processes have included the selection of a proper scale of mensuration.

Investigations have shown that the choice of a fixed angle of incidence and angle of reflection represents a disadvantage in the determination of the luster of papers that cannot well be overlooked. It is possible to characterize papers which are almost alike by a figure which represents their lustrous capacity, but when comparing different kinds of paper variations occur which are due to the personal equation involved in making the determinations.

The new apparatus used for this purpose, as described in Zellstoff und Papier volume 6, pages 427-9, is made in such a manner that it is possible to adjust the various parts of the fields so that the light is allowed to impinge on the object at any desirable angle.

The construction of the apparatus is shown in the figure. A source of light is located within a well ventilated metallic housing (L), the source of light being a Nitro-Opal lamp, which gives an illuminated surface which is lighted uniformly in the portion that has to be examined. It is possible to insert the light filter (F) at the proper point in the apparatus in order to make sure of avoiding any color changes. The paper sample (P) lies under the closing plate of the semi-cylindrical body (K), which serves both to hold the lamp and also the observing device as well as the auxiliary light.

The observing mechanism consists of a prism of special form which refracts the light that streams through it so that the light rays shown as OA and OB are made to assume parallel directions in the axis CD. The intensities of the first two light rays can be changed by means of the movable wedge (M_1). It is thus possible to change the position of the observing mechanism and make a series of determinations on the change in the distribution of the intensity of the reflected light as the angle of reflection changes.

Treatment of Black Liquor

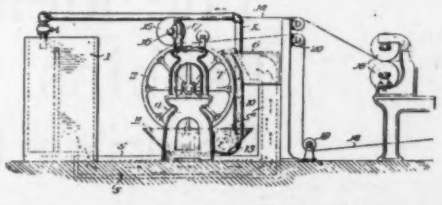
INCREASED yields of by-products such as acetone, methyl alcohol and acetates are obtained from soda-cellulose black liquor by adding alkali, for example four per cent of sodium hydroxide on the weight of wood treated, prior to the removal of most of the organic constituents in a carbonaceous form by heating the waste liquor at 350 degrees C under a pressure of about 150 atmospheres. After separation of the carbonaceous matter, the liquor is preferably divided into two portions, about seventy-five per cent being returned, after causticizing, to the digester, while the remainder is concentrated (with recovery of methanol) and dry distilled to recover acetone. Alternatively, the whole of the white liquor may be causticized, during which the methanol may be collected and a portion treated for the recovery of sodium acetate by concentration and crystallization, the mother liquor being subsequently returned to the digester. The quantity of liquor diverted for this purpose should be such that the sodium acetate content of the digestion liquor as a whole remains fairly constant. British Patent No. 258,035.

New Process of Making Waterproofed Paper

AFTER a considerable amount of experimentation, it was found that it was possible to combine the waterproofing reagent, such as liquid rubber latex, with the surface of the paper in such a manner that even when the paper is boiled with water the produced rubber film cannot be removed from it. Such papers are absolutely resistant to water and to acids, and are improved in their physical and mechanical properties, such as tearing length, elasticity, folding number and the like. The papers are also odorless and tasteless and can be made in all colors, thicknesses and weights. The process is patented in Austrian Patent No. 104,398. Papier und Schreibwaren Zeitung, 1926, number 42.

Machine for Making Paper

THE illustration shows a papermaking machine which comprises a rotary forming member, shown at (2) and means for feeding the pulp to a part of the exterior surface



of this member. The feed of pulp is at an oblique angle with respect to the direction of rotation of this rotary member. United States Patent No. 1,617,734.

Reducing Power of Sulphite Liquor

THE total organic matter in sulphite liquor is greater than the amounts of lignosulphonic acid and fermentable sugars present, the difference being due to the presence of polysaccharides which should, on submitting the liquor to hydrolysis, yield further quantities of fermentable sugars. The increase in reducing power, as indicated by the copper

More and Better Glassine

WITH PERKINS 14-ROLL GLASSINE WEB SUPERCALENDERS

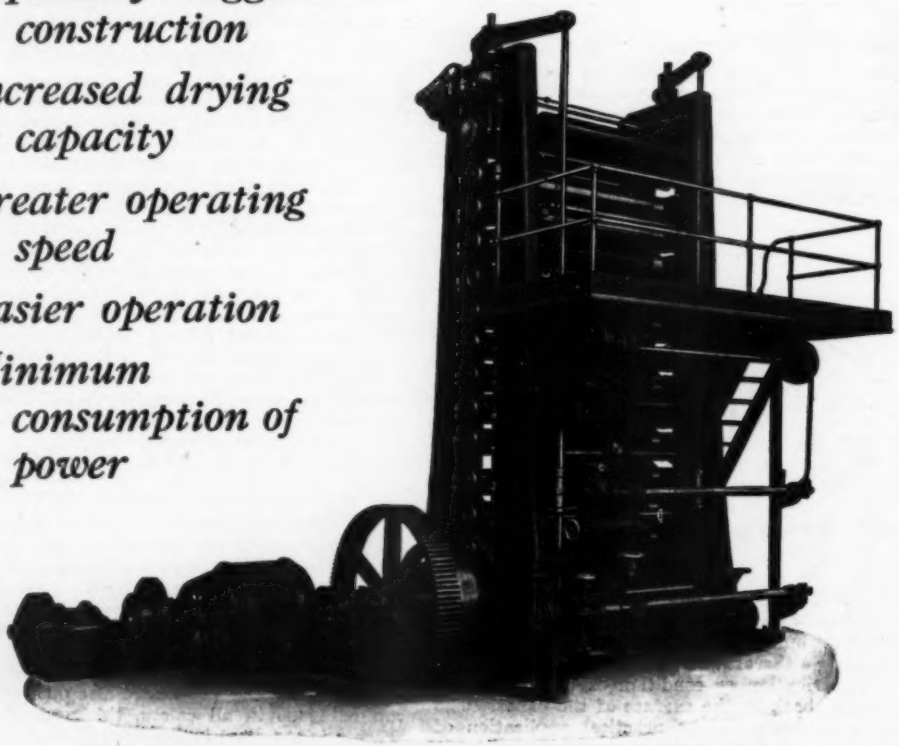
Especially rugged construction

Increased drying capacity

Greater operating speed

Easier operation

Minimum consumption of power



PERKINS 14-ROLL GLASSINE WEB SUPERCALENDER WITH TWO MOTOR OVER-RUNNING CLUTCH TYPE DRIVE

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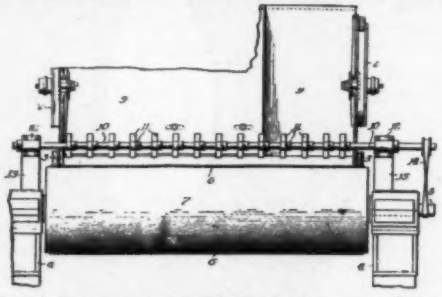
1873 PERKINS HOLYOKE 1927

number (Bertrand method) on boiling sulphite liquor or lignosulphonic acid with dilute mineral acids is, however, small. Boiling with alkalies causes a reduction in the copper number. The best results are obtained when the liquor is digested for two hours with two per cent sulphuric acid at a temperature of 120 to 130 degrees C, a treatment which increases the copper number of sulphite liquor from 29.4 to 36.6 and that of lignosulphonic acid from 2 to 5.6. Cellulosechemie, 1927, volume 8, pages 3 to 5.

Pulp Agitating Device on Foudrinier Machine

UNITED STATES Patent No. 1,617,767 is concerned with a pulp agitating device on a fourdrinier machine. This device is arranged within the feed box near the wiring open-



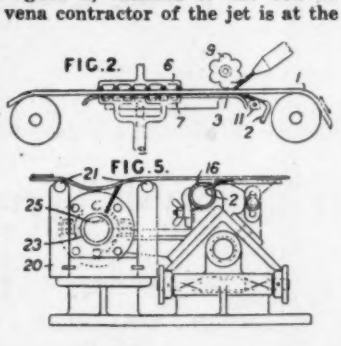
ing. The arrangement comprises a rotary member which is provided with devices for shifting the pulp laterally in the direction of the movement of the wire.

Chemical Character of Sulphite Pulp Making

THE decomposition of the wood cellulose takes place according to two principal reactions which are independent of each other. The first of these is the addition of sulphite to the ethylene compound in the lignin molecule, and the second is the hydrolysis of the lignin carbohydrate compound. Inasmuch as the addition reaction takes place at a regular rate of speed from the beginning of the digestion right straight through, not being affected by the conditions of the experiment, this results in an increase in the proportion of sulphur and lime in the undecomposed residuals. The sulphonic acids of the lignin carbohydrate compound is difficultly soluble and is first brought into solution after hydrolytic splitting.

Cleaning Felts in Paper Machines

IN THE cleaning of paper machine felts, particularly those of cylinder machines where the stock is picked up in a very wet condition, the washing of the felt to clear it of short fibers, coloring and loading matters is effected by means of a reciprocating nozzle (2), figure 2, inclined to the felt as shown and set so that the vena contractor of the jet is at the face of the felt, the latter being maintained under tension as by a plate (3) pressed upwards by springs or by a counterpoised lever, the jet being directed between the plate and the felt (1). A corrugated roller (9) may be used to give intermittent support to the felt and a similar roller (11) may be used to make the action of the jet intermittent.



The jets may be arranged in rows and so distanced that each jet acts to limit the lateral spread of adjacent jets. Air jets (6) may be used to press the felt (1) against the plate (3) and similar jets (7) directed slantwise to the edges of the plate may assist in confining the water laterally. The cleaning action may be supplemented by a steam jet terminating in a narrow slit in the middle of the plate (3). The jet of water (25) may be confined within a suction box (20), figure 5, provided with glass rods (21) to make a tight joint with a minimum of friction, other glass rods being provided as shown to limit the extent to which the felt is drawn downwards. Rows of jets (2) and (25) may be arranged in pipes (16) and (23) which are reciprocated lengthwise a distance slightly greater than the space between the adjacent nozzles. British Patent No. 263,594.

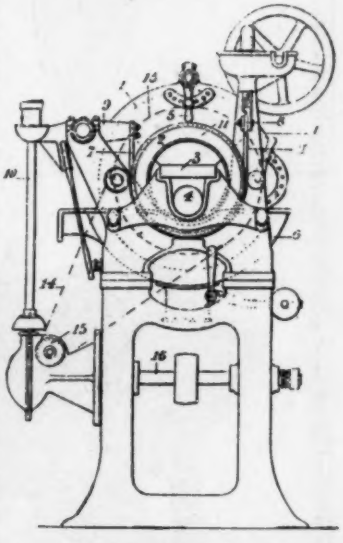
Controlling Lime Content of Sulphite Liquors

IN CONTROLLING the lime content of sulphite liquors that portion of the liquor which is prepared with the aid of digester waste gases, is used. The digester waste gases are led through a special liquor tower, which is filled with limestone. The portion of sulphurous acid, which is still contained in these gases, is absorbed by the stream of liquor which flows down the tower in countercurrent with the gases, and which in this case is simply water that has been cooled down to a low temperature. Thus these gases are made to react with the limestone. The temperature of the irrigating water is regulated so as to affect its lime content, and this is to be sure effected in such a manner that the water is previously passed through a cooler. German Patent No. 437,531.

Driving Arrangement for Knot Catcher

THE new driving arrangement which is patented in German Patent No. 438,249 possesses the advantage in making possible elastic drive, the simultaneous attainment of a minimum and maximum angular speed which is independent of the number of vibrations and the load on the machine. It is also possible to change the elastic drive of the machine into the simple normal drive.

As can be seen from the figure which represents a side view of the machine, the latter consists of a drum (1) which carries a hollow ring (2) at one end, while the plate (3) serves to catch the falling impurities and remove them. The inlet pipe is (4), and (5) is the spray nozzle for cleaning out the interior of the drum while (6) is the collecting vessel for the water laden with fibrous matter. The elastic drive is accomplished by means of a belt (7) which is fastened to a rod (8) at one end. This rod is fixed to one point during the drive, but it is regulatable in its length, while the other end of the belt is connected with a lever (9) which has a back and forth motion, attained for example by means of the crank rod (10) and the crank.



The belt (7) is directly driven, instead of by the ring (2), being led around an intermediate pulley (11) which is connected with the ring (2) or not. The ring (2) carries moreover a driving pulley (13), which is connected with it by means of adjustable screws, and this pulley serves for the belt (14) which transmits the drive from the main shaft (16) by means of the pulley (15) to the pulley (13). When elastic drive is required, it is necessary to lossen the belt (14) from the pulley (13) and to fasten the intermediate ring (11) with the ring (2). When on the other hand normal drive is required, that is when the machine is overloaded, then the intermediate ring (11) is uncoupled and the belt (14) is placed on the pulley (13). Finally when the machine is driven elastically and when nevertheless it is desired to be certain that the rotary speed of the machine will in no case be less than the speed of normal drive, the intermediate ring (11) is loaded in the coupled position and the belt (14) on the pulley, so that both drives act simultaneously.

Changes in Mechanical Properties of Paper Web

IN ORDER to determine the changes that take place in the paper web as it passes through the papermaking machine,

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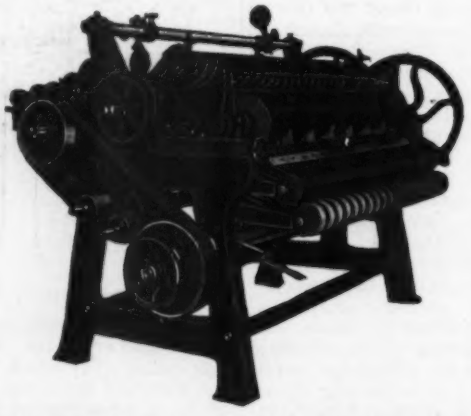

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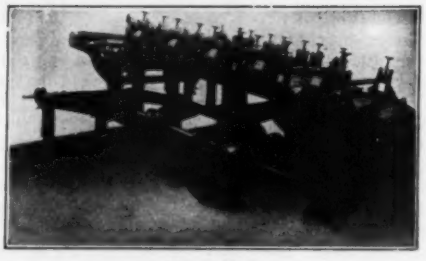

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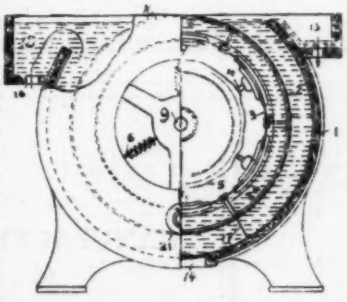
samples were simultaneously taken at intervals of five to ten minutes at various points, such as after the couch roll, the first press roll, the second press roll, the first and second groups of drying cylinders and the calender rolls. The samples were then dried in air until they contained from six to seven per cent of water and then tested.

Papers of various thickness, thus 200 grams per square meter, 85 grams per square meter and 95 grams per square meter, and of like composition, forty-five per cent of unbleached chemical pulp and fifty-five per cent of mechanical wood pulp, were examined. The obtained tearing strength figures showed that the strength increased as the paper progressed through the machine. The shaking of the wire and the pressing exerts a better felting action on the fibers. The increase after drying is connected with the sizing of the paper. This is all the more true inasmuch as the tearing strength does not show the fiber strength but the strength of the fibrous structure.

The calender rolls act in the same manner as the presses. The resistance of the paper web to folding is increased through the wire and the presses, nevertheless it falls after drying almost to the original magnitude. It is apparent that the cause of this is to be found in the physical-chemical changes that take place in the fibers during the drying operation. The elongation rises after the wire and the presses, but then it falls sharply after drying. Thus far-reaching changes in the mechanical properties of the paper are caused by its drying. Bum Prom, number 9, 1926.

Stock Screen with Rotating Screen Drum

STOCK strainers or screens provided with arms for agitating the stock, arranged radially movable with respect to the screen drum are known. In the present invention a number of such driving plates or agitators are combined to form a closed cylindrical jacket, which is arranged on the same axis as the screen drum, either within or without the screen drum itself. Thus a ring-shaped space is formed between the screen drum and the agitating device and the stock is directly removed from this space in an axial, the stock itself entering laterally through the screen drum. This enables the movement of the stock to ensue over the entire circumference of the drum in a regular fashion and particularly in the same intensity. The result is that the capacity of the apparatus is materially increased.



The installation shows a side view of the apparatus, and also a partial cross-section. The screen drum (2) is rotable in the trough (1). The space (24) which is filled with liquid inside of the drum is limited internally by a series of membranes (3) which are held between curved plates. The fingers (4) extend internally from these plates and run over the curve disc (5). Due to the variation in the height of the surface of the curve disc, the membranes are made to move outwards. The springs (6) cause the membranes to return to their original positions. The rotation of the screen drum determines the movement of the curve discs. In order, however, to obtain a more rapid pulsation of the membranes (3) when the screen drum is rotating at low speed, the shaft (9) with the curved disc (5) is rotated by means of a belt, while the screen drum can itself be rotated at a slow speed independent of the latter.

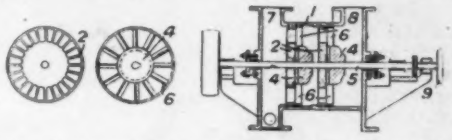
The flow of stock takes place at (16) from the box (18) into the trough (1). The crown of the drum extends above the level of the liquor (18) and is sprayed with fresh water by means of the spray tube (23). Due to the fact that the screen drum rotates, the spray of water covers the entire circumference of the drum in time.

A paddle (17) is located externally to the drum or there are several of these paddles, which come in contact with the inner walls of the trough (1) and this keeps the coarser particles of stock in constant motion towards the overflow (15). At (14) there is located an emptying or blow-out opening which can be suitably closed.

If a coupling is arranged between the driving shaft and the driving mechanism for the screen drum, it is possible to maintain the drum at a position of rest while the play of the membranes goes on uninterrupted. It is then possible to avoid injury to individual screens and membranes. German Patent No. 436,742.

Pulping Engines

PULPING engines comprise perforated plates (2) fixed in a casing (1) and rotary plates (4) fitted with inclined knives (6). The pulp is fed in at (7) and discharged at (8).



The shaft (5) carrying the knives (6) is adjustable axially by means of a wheel (9). British Patent No. 262,070.

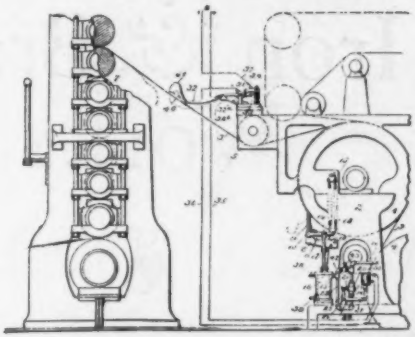
Electric Insulating Paper

IN THE manufacture of water resistant, pliable insulating paper, millboard, and the like, hard waxes, or mixtures of such waxes, or by-products derived therefrom, are added to pulp in the beating engine or edge runner mill. The waxy mixtures to be added to the pulp are obtained by boiling the wax products, or mixtures of these products, in a watery soap solution or dilute alkali until they become stiff or emulsified and dilutable or miscible with water. Enough of this is added to the pulp to give thirty to fifty per cent of wax in the dry paper or the like obtained.

The emulsion may contain the usual dyeing, filling or similar agents, and is separated out in the paper by aluminum sulphate, alum or the like, and the paper is made in the usual manner with final hard calendering which may be by stone polishers. Resin sizes may be used with the waxes. In an example eighty per cent of montan wax, twelve per cent of carnauba wax and eight per cent of coumaron resin are used together. Other materials mentioned are montan pitch, rosin and phenol artificial resins. The waxes should preferably have been previously subjected to separate hardening, clarifying and refining processes. British Patent No. 262,828.

Paper Making Machine

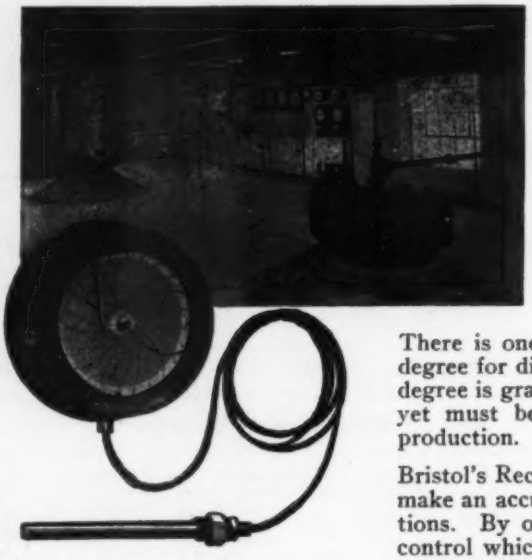
UNITED States Patent No. 1,620,037 refers to a paper-making machine in which the following features are embodied. A travelling member on which the paper web is

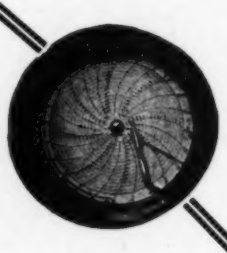


supported is combined with a doctor which is normally disengaged from this travelling member. Means are then provided for the automatic engaging of the doctor member with the travelling member, these means being controlled by the paper web itself.

Making Pulp

IN THE preparation of cellulose from wood, straws, or other fibrous vegetable material, the acid sulphite and bisulphite lyes of the alkali metals, preferably sodium, are employed. The acid character and effectiveness of the lye may be modified by the addition of neutral sodium sulphite or sodium





The Charted Course Gives Safe Guidance

There is one best schedule of temperatures with a set maximum degree for digester operation. The rate of temperature rise to that degree is gradual, to insure thorough penetration of cooking liquor, yet must be limited to the least possible time to secure high production.

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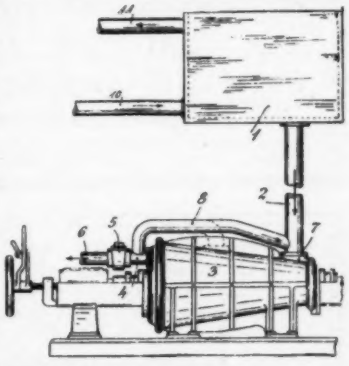
chloride, or by partly neutralizing the lye with lime or calcium carbonate, or by the use of combined sodium and calcium bisulphite lye. The material may be boiled with the lye or saturated therein and the excess lye removed and the mass then steam heated to a temperature of 100 degrees C and upwards for one or several hours. The mass so obtained is then subjected to the action of chlorine, either in gaseous form or in solution, to produce a pure cellulose. Washing before chlorination may be omitted, the lye remaining in the mass being used up to neutralize the hydrochloric acid produced during the chlorination. Alcohol and tanning materials may be obtained from the waste lye in the known manner. British Patent No. 256,757.

Conical Mill for Treating Paper Stock

GERMAN Patent No. 438,247 is concerned with a conical mill, as shown in the figure, which is used in working up paper stock and which is made in such a fashion that the grinding or beating action of the mill is felt throughout its entire length. As may be seen from the figure, the mixture of water and stock enters through the pipe (10) into the container (1) which is also provided with an overflow pipe (11). The stock then flows through the pipe (2) into the mill (3) through the inlet port (7). There the material is subjected to a beating action, and thence it leaves through the outlet (4) and through the regulating device (5) through the pipe (6).

Between the outlet (4) and the inlet (7) a connection (8) is inserted. The pipe (8) serves to conduct a certain amount of the beaten stock back to the inlet pipe (7) where it is mixed with a certain amount of new stock from the container (1). This placement of the connecting pipe (8) between the outlet pipe (4) and the inlet pipe (7) creates a pressure differential in the mill, which is equal to the difference between the higher pressure at the outlet and the lower pressure at the inlet. This pressure differential serves to force the mixture of pulp and water through the apparatus.



The last stage of the sulphite digestion process may be considered as a pure hydrolytic process and bears a very close relationship with the concentration of hydrogen ions in the liquor. The values for the concentration of hydrogen ions in the digestion liquor, determined in accordance with the crude sugar inversion method, reduce at the beginning of the digestion, where the sulphur dioxide addition ensues, and then it increases again as the digestion progresses. The addition of sulphur dioxide ends at the same time. At the end the values are in excess of those of the original digestion liquor, which fact may be explained by the presence of free, strongly acid lignin-sulphonic acids.

The free calcium sulphite in the liquor disappears at this point in the digestion. The digestion must be finished soon thereafter, as the free lignin-sulphonic acid will easily resinify. The author sees in this resinification the cause of the black cooking. The speed of the addition of sulphur dioxide is independent of the hydrolytic process.

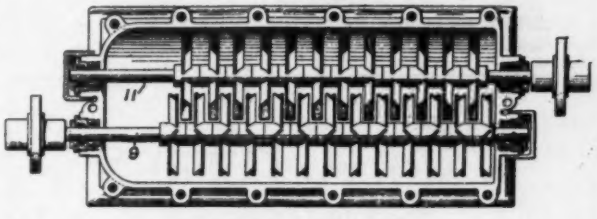
In digesting wood with sodium bisulphite, which means with liquids containing low concentrations of hydrogen ions, this condition remains the same, and the splitting of the lignin carbohydrate compound must nevertheless be accelerated in this case by the increase in the temperature. The same conditions were observed to exist in the cases where equivalent proportions of magnesium sulphite and ammonium sulphite were employed. This refers to the decomposition of the lignin and the addition of sulphur dioxide. The author considers this a further corroboration of the correctness of this theory.

The conditions are quite different as far as the strength of the product is concerned. It is generally true for all cases that a maximum of strength is attained in the pulp which is taken from the digester at that point where the sulphite in the liquor disappears and a clear change in color of the digestion liquors ensues. It is remarkable that the danger of obtaining black cooks is greater in the case of the potassium sulphite liquor than it is in the case of the magnesium sulphite liquor. Suomen Paperija Puutavaralethi, 1926, number 9.

Pulping Waste Paper

IN PULPING and deinking waste paper, the material, which is mixed with water with or without a detergent for deinking and cleaning, is subjected to the action of a multiplicity of substantially equal and opposite forces. These forces are produced, for example, by the blades of opposite

FIG:2.



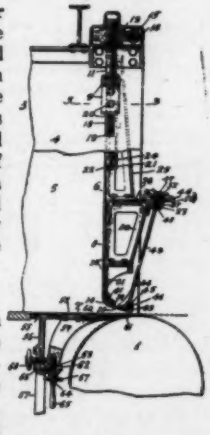
pitch on individual propellors coacting with corresponding blades on adjacent propellors on the same shaft (11), shown in the figure, and also on adjacent propellors on one or more companion shafts (9). A relatively smaller amount of liquid is used with this apparatus. A hopper is provided at one end and a discharge at the other, the operation of the apparatus being continuous and the feed through it being by gravity. British Patent No. 262,270.

Preparation of Pulp

NEWSPAPER or other paper which has a pigment applied to it is reclaimed by reducing the paper to pulp and removing the pigment from it and then mixing the pulp with an alkali acid sulphite at a temperature below 110 degrees F. Prior to treating with the sulphite the pulp may be treated with a caustic soda solution also at a temperature below 110 degrees F, the amount of caustic soda being approximately two and one-half per cent by weight of the paper treated. The alkali acid sulphite is preferably added in excess of that required to neutralize the alkalinity of the pulp, the resulting pulp being washed to remove the excess sulphite. British Patent No. 257,774.

Paper Making Machine

UNITED STATES Patent No. 1,619,-168 is concerned with a fourdrinier papermaking machine, in which there is a combination of a breast roll, and wire, and a slice adjustable to and from the wire. The lower end of the slice carries a controller bar. This bar is made of flexible metal and is formed with weakened portions at a number of points, so that it may be flexed with a light pressure. Means are provided for flexing the bar both longitudinally and transversely with respect to the wire.



Wood Pulp

IN THE preparation of pulp from wood by the bisulphite method, the boiling is continued until no more bisulphite is present, as shown by the Sander test. When boiling is completed, the free sulphur dioxide is blown and absorbed in the known manner and none is allowed to escape during the boiling. A mixture of bisulphites of calcium and magnesium is preferred. British Patent No. 263, 693.

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Valuations

New York, April 1, 1927.

ALMOST without exception, reports tell of a fairly large movement of paper into consuming channels. There is a steady demand developing, aggregating good volume and involving practically all classes of paper. Yet there is more complaint than praise registered within the industry concerning the present market condition. The reason? Nothing else, than because paper manufacturers are really realizing little profit despite the comparatively big production. Overcapacity of paper mills has created a market situation where there is a certain amount of pressure exerted to sell more paper than the consuming market can readily absorb, which in turn has led to a reduction in the margin of profit to a degree where today paper is being manufactured and sold at entirely too narrow a difference above actual cost to net the producer a fair rate of gain. Consequently, complaints regarding the condition of the market are numerous.

The demand for paper of most kinds is holding up well. There is room for improvement in some directions, market activity is in a sense somewhat spotty, particularly in certain classes of paper, but there seems little doubt that in the aggregate more paper is moving into consuming channels at present than probably ever before unless in abnormal boom times. Buyers are operating freely insofar as their direct requirements are concerned, and there are consumers who are purchasing ahead to some extent also. The demand is very healthy in character; in fact, the market in its entirety displays decided health, indications being that the great bulk of the paper being bought is going straight into consumption, with few or no signs of any stock accumulation in any quarter.

The only apparent difficulty is that paper mills of the country are equipped to produce more paper than the consumptive capacity of the nation can stand. Paper manufacturers obviously are anxious to operate their plants full, most of them adhering to the theory that in capacity operations there is more profit, and with this and that and other mills endeavoring to corral enough orders to warrant maximum output, the price tone is bound to be affected. If a consuming outlet in the United States or an export market could be found for, say 10 to 15 per cent of tonnage the paper mills in this country are equipped to produce, the whole problem would be solved and there doubtless would be a much firmer price situation in the paper industry.

The production of paper in the United States during January as reported by identical mills to the American Paper and Pulp Association and co-operating organizations, showed an increase of 3 per cent as compared with December's output, following an 8 per cent decrease in December from November, according to the association's monthly statistical summary. The total production of paper of all kinds in January reached 515,603 net tons, against 514,246 tons in the preceding month, and shipments from mills amounted to 508,384 tons, contrasted with 519,908 tons in December, while mill stocks increased slightly to 230,129 tons of all grades at the end of January, against 228,275 tons at the end of December.

Production of newsprint in the United States in February amounted to 121,318 tons, and shipments from mills to 119,076 tons, according to the monthly report of the News Print Service Bureau. Production in Canada was 150,773 tons and shipments 145,263 tons, making a total United States and Canadian newsprint output of 272,091 tons and shipments of 264,339 tons. During February 14,297 tons of newsprint was made in Newfoundland and 1,077 tons in Mexico, so that the total North American production for the month amounted to 287,465 tons, compared with 316,097 tons in January last.

The Canadian mills produced 37,146 tons more of newsprint in the first two months of 1927 than in 1926, which was an increase of 13 per cent. The United States output was 12,618 tons or 5 per cent less than in the first two months of 1926, that in Newfoundland 5,258 tons or 20 per cent more, and in Mexico 273 or 14 per cent more, making a total North American increase of 30,059 tons or 5 per cent. During February the Canadian mills operated at 86.3 per cent of rated capacity and the United States mills at 88.7 per cent. Stocks of newsprint at Canadian mills totaled 22,769 tons at the end of February and at U. S. mills 18,426 tons, making a combined total of 41,195 tons, which was equivalent to 3.2 days average production. Stocks at the end of January totaled 33,223 tons for both countries.

The production of paper board in the United States during January reached a total of 171,002 tons, showing an appreciable increase over the output amounting to 164,793 tons in the preceding month, according to the monthly statistical review of the board industry compiled and issued by the U. S. Department of Commerce. Board mills of the country produced at 76.3 per cent of their rated capacity in January, compared with 70.1 per cent in December. Orders received for board during January called for a total of 192,366 tons, against 185,562 tons in December, and unfilled orders held by mills at the end of January aggregated 104,810 tons, contrasted with 85,955 tons a month previous. Shipments of board from mills in January totaled 172,752 tons, compared with 169,547 tons in the preceding month, while stocks at mills at the end of January were 50,569 tons, against 52,905 tons at the end of December.

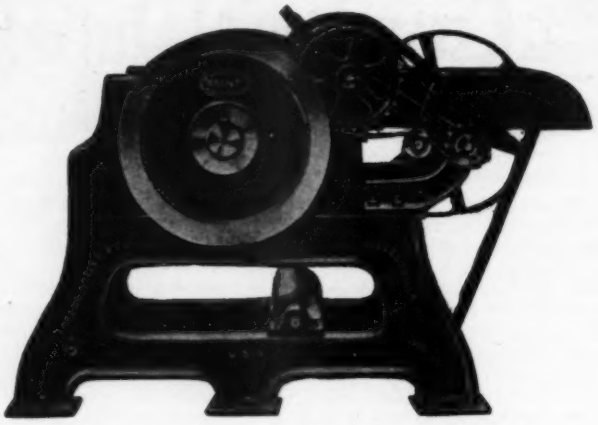
There is a consistently good movement of newsprint from mills to consuming centers. Consumption, from all accounts, is holding up to a high level and it is probable an increase will be witnessed during the next few weeks as the spring usually is a period of heavy consumption of print paper owing to advertising campaigns in the newspapers, particularly by department stores and other retailers. The price tone in the market is firm and there appears little basis for belief prevailing quotations will be altered during the remainder of this year.

The market for book paper is steady; demand is fairly large, and prices are maintained with little or no change. Some manufacturers, however, are seeking additional business, and there is pressure for orders from certain quarters. Tissue papers are enjoying an excellent demand and are firm quotably. Wrapping paper has, if anything, experienced a little expansion of demand recently, due to retailers stocking up for their pre-Easter season. Prices are in a more or less stationary position and steady of tone.

Board demand is slowly though surely improving. The market has been for three or four months anything but satisfactory to manufacturers but it would appear as if better times are in store. Board quotations are maintained firmly on a level of around $47.50 a ton delivered in New York for filled news board and $45 for plain chip. A development in the board market is that on March 10 manufacturers announced a change in selling terms from 2 per cent 15 days, to 1 per cent 10 days, which is regarded in the distributing and consuming trades as a rather drastic revision.

A conference of the Paper Supply and Allied Line Trade Group, numbering about twenty-five credit department managers, will be one of thirty trade group gatherings which will feature the 32nd annual convention of the National Association of Credit Men at Louisville, Ky., from June 6 to June 10, it was announced recently by Dr. Frank A. Fall, manager of the education and research department of the association.

G. N. Bull, formerly with the Worthington Pump and Machinery Co.'s Washington, D. C., office, has been made district manager of the New York office of The Lincoln Electric Co.



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1855 Elmira, N. Y., U. S. A. 1927

GOOD RAGS FOR PAPER MILLS NEW CUTTINGS

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INCORPORATED

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Branch—Cleveland, Ohio

Domestic Raw Materials

Papermaking Rags

There are certain grades of papermaking rags, notably in new cotton cuttings, which stand out in the current demand and which display a strong price tone; on the other hand, the market generally is comparatively quiet for this season of the year and the trend in values mostly is downward. Contrary to expectations in the trade, demand for roofing stock and the other grades of old rags has not as yet assumed broader dimensions; there is a moderate business transpiring in such descriptions but not of sufficient volume to have supporting, let alone strengthening, influence on market prices. Indications point to paper manufacturers in a great majority of cases buying only to satisfy immediate and urgent wants, and dealers report that most mill orders call for relatively small amounts and that it is necessary for them to handle supplies on a very close margin for profit in order to compete and transact business.

The statistical situation appears to be changing to some extent. For the past several years, as is well known and as a study of import figures will confirm, Europe has been shipping extra large quantities of papermaking rags to the United States. Imports in 1925 exceeded all records, and our receipts from foreign sources last year were large though not up to the high level reached in 1925. Heavy importations have been a favorable factor for consumers and have in more or less measure helped to create a somewhat easy price tone in the market here during most of the time for several years. Now it would seem as if conditions abroad are being altered whereby fewer rags are likely to be exported to America. Paper mills in Germany and in other countries on the European Continent are becoming busier, building operations are increasing so that roofing felt manufacturers are speeding up their production, wages are rising to a degree where it is harder to secure collectors of rags, and a shortage of cotton waste is resulting in a larger use of cotton rags for shredding and shoddy purposes—all of which is leading to smaller supplies of rags available for shipment across the Atlantic to the U. S.

This may result eventually, and perhaps not far distant, in a stronger market for papermaking rags, more especially the cheaper or roofing stock grades, because it is commonly acknowledged collections within the United States are not up to par and that more and more rags are being used for automobiles and for wiping purposes and thus fail to reach paper mill supply channels, while our paper manufacturers are depending more and more on foreign rags. Importers put a good deal of stress on the situation and assert they are experiencing much difficulty buying rags abroad, particularly at the prices they can afford to pay as against the figures consumers in this country are willing to grant. In Germany paper mills are buying freely, and prices of many grades of rags prevailing there are well above those that can be obtained for export to the U. S. Consequently German dealers are offering rather sparsely to importers here. The same is true to a lesser degree in France, Belgium and other countries in Europe where our large supplies of papermaking rags originate. Moreover, it is reported Russia has placed orders in Germany for sizable quantities of rags, presumably for shoddy purposes.

Ruling prices of cotton cuttings of practically every grade are quite firm. Further advancement has been recorded in quotations on some descriptions and the market appears fairly well sold up, with dealers stating fresh supplies are coming in slowly owing to curtailment in the clothing manufacturing industry. Dealers ask at least 12 cents a pound and most often higher for No. 1 white shirt cuttings f.o.b. shipping points, while fancy shirt cuttings are quoted at 6.50 cents, light silesias at 8.25 cents, blue overall cuttings at 8 cents, white lawns at 9.50 cents, black silesias at 5.75 cents, and washables at 5.25 cents.

In the East, quotations on No. 1 roofing stock or cloth strippings range around 1.75 cents per pound at dealers' points of shipment, and on No. 2 roofing around 1.35 cents, but in the West slightly higher prices usually are asked. Foreign dark colored cottons are selling at about 1.60 to 1.65 cents a pound ex dock New York for forward shipment from abroad. Prices quoted on old white cottons show little change though the tendency seems downward and probably some purchases have been effected at slight recessions. Thirds and blues are in slow demand and are quoted around 2.25 cents a pound for repacked and 1.70 cents for miscellaneous packing.

Average quotations f.o.b. shipping points and ex dock New York are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	12.00-12.25
White shirt cuttings, No. 2	8.00- 8.50
Fancy shirt cuttings	6.25- 6.50
Washables, No. 1	5.00- 5.25
Unbleached muslins	10.50-10.75
White lawns	9.25- 9.50
Overall cuttings, blue	7.75- 8.00
Black silesias	5.50- 5.75
Light flannelettes	9.00- 9.25
Canton flannels, bleached	9.50- 9.75
Canton flannels, unbleached	8.25- 8.50
Shoe cuttings, bleached	9.50- 9.75
Shoe cuttings, unbleached	8.25- 8.50
Light silesias	8.00- 8.25
O. D. khaki cuttings	5.75- 6.00
Mixed khaki cuttings	5.00- 5.25
Corduroy cuttings	3.50- 3.75
Cottonade cuttings	4.00- 4.25
Linens, No. 1 white, foreign	13.00-13.50
Light prints, foreign	3.00- 3.25
Old Stock—	
Whites, No. 1 repacked	6.00- 6.50
Whites, No. 2 repacked	3.00- 3.25
Whites, house soiled	2.00- 2.25
Whites, street soiled	1.85- 2.00
Lace curtains	5.75- 6.00
Thirds and blues, rough	1.60- 1.75
Thirds and blues, repacked	2.00- 2.30
Black stockings	3.75- 4.00
Cotton canvas, No. 1	4.75- 5.00
White cotton batting	2.50- 2.75
Roofing, No. 1 (cloth strippings)	1.70- 1.80
Roofing, No. 2	1.30- 1.40
Linsey, garments, foreign	1.80- 1.85
Dark colored cottons, foreign	1.60- 1.65
Blue linens, foreign	4.00- 4.25
Gray linens, foreign	4.25- 4.50
White linens, foreign	8.00- 8.50
Light prints, extra, foreign	1.75- 2.00

Rope and Bagging

The market for old rope is fairly firm and appears to be gradually widening in scope as paper mills increase their buying. Demand is of reserved character, however, and consumers apparently are proceeding carefully in acquiring supplies in an effort not to excite the market because it seems well recognized that available supplies of good quality old rope, more especially of domestic origin, are below normal and buyers doubtless realize any undue demand would result in a rather sharp price rise.

Paper mills are granting 4.75 cents per pound f.o.b. shipping points readily for No. 1 domestic old manila rope, and

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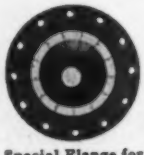

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foreign manila has been sold on a price basis of 3.75 cents ex dock at New York and other Atlantic ports. Possibly these prices have been exceeded in some instances. Strings are in slow demand, only a few consumers buying, and prices are relatively easy at a cent to a cent and a quarter per pound at shipping points.

Old bagging is moving in a fair way and at maintained prices. Gunny has improved its quotable position to some extent to where dealers generally want 2.25 cents a pound for No. 1 quality f.o.b. points of shipment. No. 1 scrap bagging is selling to paper mills at 1.60 to 1.80 cents a pound, and roofing bagging at 1.25 to 1.35 cents at dealers' points.

F.o.b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	2.10-2.25
Gunny, No. 1 foreign	2.00-2.25
Scrap bagging, No. 1	1.60-1.80
Roofing bagging	1.25-1.35
Wool tares, heavy	2.25-2.50
Wool tares, light	2.00-2.25
Manila rope, No. 1 foreign	3.50-3.75
Manila rope, No. 1 domestic	4.50-4.75
Sisal strings	1.75-2.00
Mixed strings	1.00-1.25

Old Paper

The best that can be said about the old paper market is that it is very quiet. As a matter of fact, the condition is bordering on to a critical stage; consumers—and particularly box board mills—evidently are not in need of normal supplies and therefore are buying in limited tonnage, and prices on some grades have gradually declined to where they rest on levels showing dealers virtually no profit whatsoever in their operations. This is especially true with regard to the East where prices are considerably lower than prevail in the Middle West and elsewhere through the country, and reports say the situation has grown so acute in New York City that collectors and packers are forsaking the trade there to seek some other more lucrative form of employment. The situation seems to hinge on the fact that there is an over-supply of old paper; consumption is not up to usual levels, whereas the production is in excess of the requirements of board and other mills.

Folded news has dropped in price to where sales have been made in New York at 45 cents a hundred pounds f.o.b. that city, and No. 1 mixed paper is selling in the East down to 35 cents at shipping points. Prices of these grades are higher in the West. Common mixed paper is quoted at 25 cents a hundred pounds f.o.b. dealers' points, overissue news at as low as 55 cents, and No. 1 manilas at 65 cents. Book stock is firm and prices in some localities are advanced slightly. Heavy No. 1 books and magazines are quoted at 1.15 to 1.25 cents per pound at shipping points. Shavings have eased in value and are now priced around 3.25 cents a pound for No. 1 hard white, and 2.85 cents for No. 1 soft white shavings.

The following are quotations named by dealers f.o.b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	3.15-3.30
Hard white shavings, No. 2	2.85-3.00
Soft white shavings	2.75-3.00
Colored shavings	1.00-1.25
Heavy book, No. 1	1.15-1.25
Crumpled book, No. 1	.85- .95
Ledger stock	1.40-1.65
Kraft, No. 1	1.90-2.10
Manilas, No. 1	.65- .80
White blank news	1.60-1.70
Overissue news, No. 1	.55- .70
Folded news	.45- .60
Sulphite mill wrappings	.65- .75
Mixed paper, No. 1	.35- .50
Common paper	.25- .35

Pulp Wood

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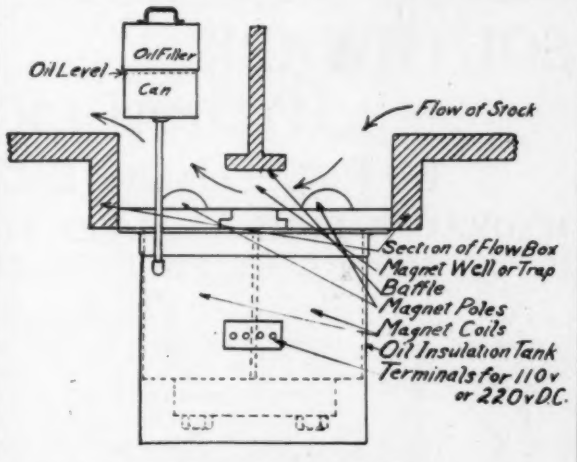

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ter has been comparatively large, and spring drives are getting under way in some districts. The market is steady and dealers generally express the opinion prices will rule firm.

Exports of pulp wood from Canada during the first two months of the current year amounted to 291,272 cords, valued at $2,708,686, compared with 216,268 cords of a value of $1,997,398 exported in the corresponding time of last year. Virtually all of this wood comes to the United States.

Mechanical Pulp

Demand from transient buyers for mechanical pulp is rather slow as well as spotty, it is reported, but there is a steady movement of supplies into consuming channels on contracts. Evidently many consumers have been able to grind on a fairly large scale during the last several months, having been favored with plenty of water in mill streams, and there is consequently not the usual amount of activity in the open market. Some producers, anxious to effect sales, are shading prices, with the result the price tone is none too steady; in fact, it might be called easy; at any rate, it is apparent buyers are securing all the ground wood they want and at any prices within reason which they care to bid.

Grinders in Canada generally quote about $27 to $28 a ton f.o.b. pulp plants, depending on the freight to consuming centers and the air dry test. There have been purchases made down to $25 at shipping points, but in most cases pulp obtained at this price level has carried an extra amount of freight to the consumer. Domestic ground wood is nominal in price, there being little supply offered. Foreign of Scandinavian origin is quoted at about $37 a ton ex dock New York for dry ground wood for forward shipment from abroad.

Production of mechanical pulp in the United States in January, 1927, totaled 95,103 net tons, compared with 95,737 tons produced in December last, according to the American Paper and Pulp Association's figures. Mill stocks at the end of January aggregated 127,234 tons, against 127,352 tons a month previous.

Chemical Pulp

A steady tone characterizes prices of domestic chemical wood pulp although demand from consuming quarters at present is somewhat narrow. Most producers are well fixed with contracts on their books which are relieving them of the bulk of their output, and therefore there is no great pressure to market pulp other than in an occasional instance when some manufacturer comes into evidence to sell a fixed tonnage and probably at a little concession in price, after which quotations are put back on the generally-named level.

Bleached sulphite is quoted at 4 to 4.25 cents per pound f.o.b. pulp mills for the most popular brands, with quotations ranging up to 4.75 cents for extra qualities. No. 1 strong sulphite is selling at 2.85 to 2.90 cents a pound at producing plants, and book grade sulphite is quoted at 3.25 to 3.50 cents per pound. Domestic No. 1 kraft pulp is steady at 2.85 to 3 cents a pound at shipping points, and bleached soda pulp is unchanged at 3.75 cents at pulp mills.

Production of wood pulp in the United States during January last showed an increase of two per cent for all grades as compared with the preceding month, totaling 207,741 net tons of both chemical and mechanical pulp, against 205,325 tons in December, according to the American Paper and Pulp Association's monthly report. Production of chemical pulp amounted to 112,638 tons in January, contrasted with 109,588 tons in December, while mill stocks of chemical were 18,318 tons at the end of January, against 20,834 tons at the end of December.

Quotations f.o.b. pulp mills are as follows:

Bleached sulphite	4.00-4.75
Easy bleaching sulphite	3.20-3.40
Unbleached sulphite, No. 1 strong (news grade)	2.85-3.10
Unbleached sulphite, No. 1 book	3.25-3.50
Soda pulp, bleached	3.75-4.00
Mitscherlich, unbleached	3.25-3.50
Kraft, No. 1	2.85-3.10
Screenings, refined	1.40-1.60

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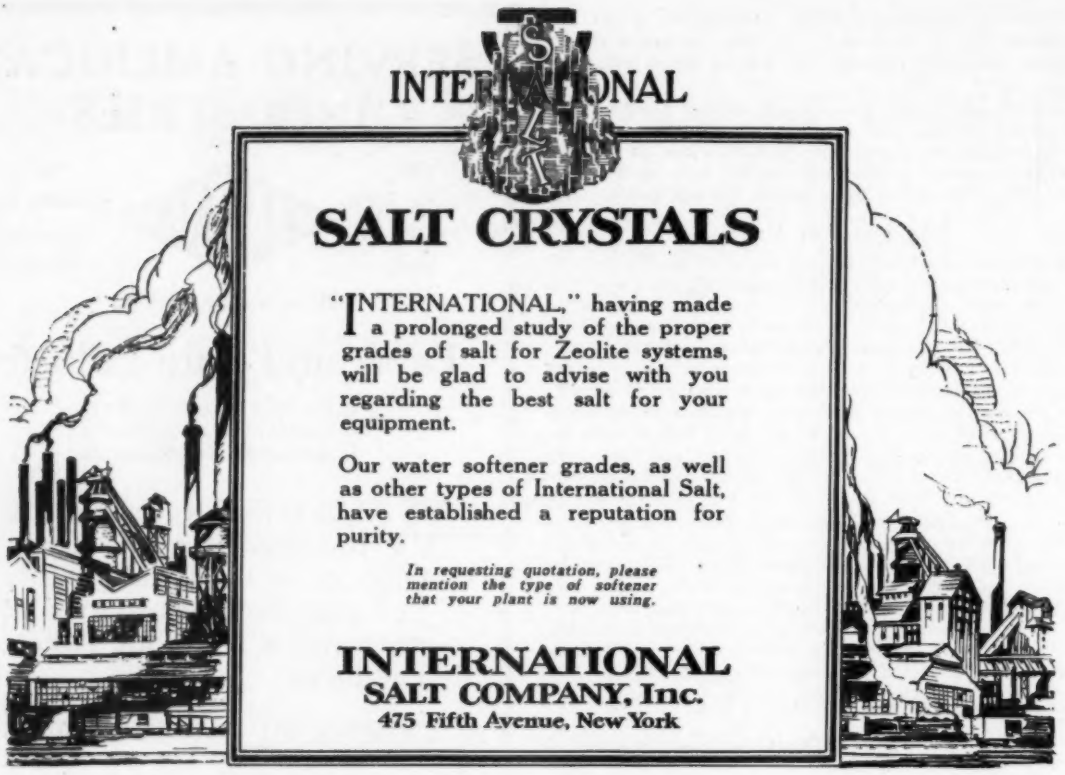

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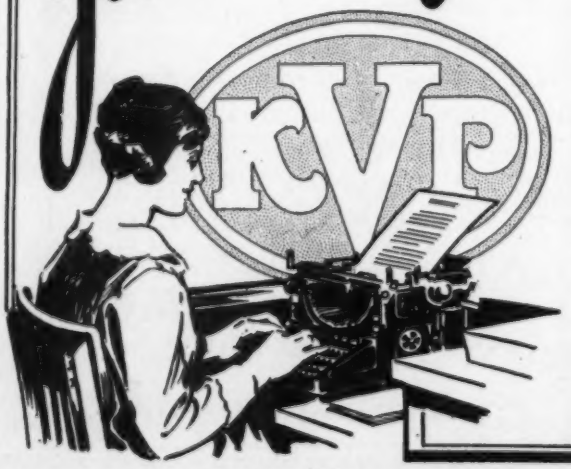
Uncle Jake says



"The reason many men talk so incessantly about life's fitful fever is because they never do enough hard WORK to get up a sweat."

We are not only working hard, but we believe we are also working intelligently to the end that we may furnish you with the best printing paper for all uses that it is possible to produce.

K. V. P. BOND

many printers voluntarily tell us is the best all-round paper they ever used.

Uncle Jake
of the
KALAMAZOO VEGETABLE PARCHMENT CO.
KALAMAZOO, MICHIGAN

New Papers

Writing—	
White rag	15-40
White sulphite	9-30
Colored rag	15-40
Colored sulphite	8-30
Ledger—	
White rag	16-40
White sulphite	9-30
Colored sulphite	8-30
Colored rag	15-40
Bonds—	
White rag	16-40
White sulphite	7-30
Colored sulphite	7-30
Colored rag	15-40
Book—	
No. 1 S. & S. C.	6.50- 8.00
Machine finished	6.25- 8.00
English finished	6.25- 8.00
Coated and enameled	8.00-14.00
Lithograph, M. F.	8.50-15.00
Newsprint—	
Rolls, contact	3.25 ....
Rolls, transient	3.50 ....
Sheets	3.75- 4.00
Side runs	3.00- 3.25
Cover Stock—	
Coated, both sides	10.25
Coated, one side	10.15
Tissue—	
No. 1 white, 20x30	.75- .85
No. 2 white, 24x36	.70- .80
No. 1 manila, 24x36	.70- 1.80
Kraft	.90- 1.00
Wrapping—	
No. 1 kraft	6.00- 6.50
No. 2 kraft	5.25- 5.50
Southern kraft	4.75- 5.00

Boards—	New York and Chicago
Solid news	47.50-50.00
Straw	52.50-57.50
Plain chip	42.50-45.00
White coated chip	55.00-60.00
Manila coated chip	50.00-55.00
Binder's board	70.00-75.00

Chemicals

Quotations on casein have been marked up to some extent, and importers generally ask 17 to 17.50 cents per pound, duty paid, for the foreign product while domestic casein is quoted at 16.50 cents a pound upwards. The bleaching powder market is firm and supplies are moving freely against contracts and also on spot orders. Prices show no quotable change at 2 to 2.40 cents a pound in large drums f.o.b. works. Caustic soda is steady at 3 to 3.10 cents per pound for spot shipment at works, and prices of soda ash are maintained at 1.32½ cents a pound for the 50 per cent light product packed in bags.

Average quotations are as follows:

Alum, lump ammonia	3.50- 3.75
Alum, lump starch	3.75- 4.00
Blanc fixe, powder	4.00- 4.25
Bleaching powder	2.00- 2.40
Brimstone (long ton, at mine)	18.00-19.00
Casein (duty paid)	16.50-17.50
Caustic soda, spot delivery	3.00- 3.10
China clay, domestic washed	8.00-10.00
China clay, foreign	14.00-20.00
Rosin, grade E	11.75 .....
Satin white	2.00- 2.25
Soda ash, 50 per cent light (bags)	1.32½ .....
Starch, papermakers', in bags	3.22 .....
Talc (ton)	16.00-18.00

Foreign Trade Opportunities

Additional information regarding the following foreign trade opportunities issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce may be obtained from the Bureau in Washington, D. C., or its branch offices. It is requested that the number of the inquiry be given at all times.

No. 24274—Waxed paper bags. Durango, Mexico. Purchase desired.

No. 24276—Cardboard and press paper. Colima, Mexico. Purchase desired.

No. 24401—Box board and carton board. Dublin, Ireland. Agency desired.

No. 24291—Envelope making machines. Hongkong, China. Purchase desired.

No. 24453—Large paper bags for sand, cement, flour, etc. Johannesburg, South Africa. Purchase desired.

No. 24454—Bond and cover papers, parchment papers, and greaseproof papers. London, England. Agency desired.

No. 24451—Leatherboard, 28 by 38 inches. London, England. Purchase and agency desired.

No. 24452—Wall board, fiber. Amsterdam, Netherlands. Purchase and agency desired.

No. 24460—Writing papers and papeteries. Berlin, Germany. Agency desired.

No. 24664—Cartons and wrappers for cigarettes and tobacco. Ceiba, Honduras. Purchase desired.

No. 24665—Machines for making paper bags. Paris, France. Purchase desired.

No. 24636—Paper and stationery. Lingah, Persian Gulf. Purchase and agency desired.

No. 24666—Vulcanized fiber for trunks, bags and boxes. Montevideo, Uruguay. Purchase and agency desired.

No. 24769—Vulcanized fiber in sheets, 1 to 10 millimeters thick. Dresden, Germany. Agency desired.

No. 24767—Waterproof paper with inserted twine. Prague, Czechoslovakia. Purchase desired.

No. 24777—Chemicals for paper manufacturing. Cologne, Germany. Purchase desired.

United States Civil Service Commission announces the following examinations, applications for which must be on file with the Civil Service Commission at Washington, D. C., not later than April 19: Technologist, associate technologist, and assistant technologist, to fill vacancies in the Bureau of Standards, Department of Commerce, etc. Application for the examination of assistant scientific aid (qualified in paper technology), must be filed with the commission not later than April 30. Full information and application blanks may be obtained from the commission in Washington, D. C., or the secretary of the board of U. S. civil service examiners at the post office or custom house in any city.

The joint committee on approved pulp testing chemists for the paper industry of the United States has recently approved for listing Messrs. R. H. Stevens and Armand J. Abrams, of Bogalusa Paper Co., Bogalusa, La.

B QUALITY PULPS

"HAFSLUND BEAR"
Bleached Sulphite

"FORSHAGA"
Bleached Sulphite

"HURUM SPECIAL"
Extra Strong Kraft

"BAMBLE"
Extra Strong Kraft

The Borregaard Company
200 Fifth Ave. Incorporated New York, N.Y.

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PRICE & PIERCE, LTD.
17 East 42nd Street, NEW YORK CITY

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SELLING AGENTS
for Bathurst Pulp in the United States

Unbleached Sulphite 50 tons daily
Kraft Pulp 50 tons daily

Our pulp is made from Canadian Spruce
We ship in sheets, baled

BATHURST, NEW BRUNSWICK, CANADA

PERKINS-GOODWIN CO.

ESTABLISHED OVER 80 YEARS

33 WEST 42nd STREET
NEW YORK

Sole Selling Agents for

OBBOLA KRAFT PULP

EXPORTS

Exports of paper from the United States during the month of January, 1927, showed a little decline in point of value as compared with the preceding month, and also a slight decrease from the exports in January last year, according to statistics issued by the U. S. Department of Commerce. During January last, total exports of paper of all classes from this country reached a value of $2,123,682, contrasted with exports valued at $2,328,963 in December, 1926, and with total exportations of a value of $2,135,892 in January, 1926.

Exports of newsprint paper recorded a sharp drop in January as compared with the corresponding month a year ago, amounting to 2,719,613 pounds of a value of $121,961, against 4,970,061 pounds of a value of $231,602 exported in January, 1926. The bulk of the exports in January this year were to the Philippine Islands, shipments there amounting to 1,198,376 pounds, valued at $47,130.

Exports of book paper, not coated, from the United States in January totaled 1,644,746 pounds, valued at $126,581, showing a gain in quantity and value over the 1,300,962 pounds of a value of $120,016 exported in the similar month of last year. Exports of wrapping paper in January were 2,575,638 pounds, valued at $189,565, against 3,353,004 pounds of a value of $215,152 in January, 1926.

Writing paper exports in January amounted to 794,071 pounds, valued at $135,041, contrasted with shipments aggregating 747,893 pounds of a value of $113,373 in the same month a year ago. Exports of box board were 3,820,636 pounds of a value of $101,606 in January last, against 4,032,474 pounds of a value of $112,981 a year ago, while other board exports totaled 2,521,721 pounds, valued at $148,315, compared with 2,103,715 pounds of a value of $115,984 in January, 1926.

IMPORTS

Wood Pulp

It is reported generally that there is not much activity in imported wood pulp at present. The market is exhibiting spotty action, as some consumers come into evidence to buy against definitely known requirements, and in certain such instances sales of large tonnage are recorded, but otherwise there is a lack of important demand, as a great majority of paper and board manufacturers appear to be pursuing a waiting policy, presumably in expectation of securing pulp supplies later on at more favorable costs. The situation as it now shapes up is largely a psychological one, according to importers. Buyers are possesed of lower price ideas which has been brought about by offerings of pulps from certain foreign sources at fairly sharp concessions. Quotations on Scandinavian pulp remain quite firm; producers in Sweden and Norway are reported well sold up over the next few months and, in fact, throughout this year, and they are not particularly anxious about effecting additional sales at the moment unless receiving their full quoted prices, but pulp of German, Austrian and Czechoslovakian origin is said to be offering at prices a little below those named until recently, and representing an attractive discount from the Scandinavian prices, so that consumers evidently feel the entire market is softer and are mostly insisting on price concessions before placing orders.

It is true supplies of pulp have been arriving in the United States in large volume from abroad during the last several months. As an instance, imports of chemical pulp during the month of January—the last month for which official Government figures are available—amounted to a total of 137,607 long tons of all grades, valued at $8,904,355, which came pretty near to establishing a new high record of imports into this country in any single month. In December last imports of chemical pulp were 128,769 tons—the biggest month's receipts in any month during 1926. These large arrivals obviously have slowed down demand to some extent because consumers, having sizable supplies coming in, have been enabled to hold off buying. Imports of ground wood in January amounted to 16,409 long tons, valued at $451,532, compared with 20,139 tons of a value of $610,558 imported in the preceding month, and 22,668 tons of a value of $648,654 in January, 1926.

Thus far nothing has been heard regarding the pulp and paper mills in Norway becoming directly involved in the strike affecting several major manufacturing industries in that country. Information received early last month was to the effect the pulp mill workers would walk out in sympathy on March 16 if the strike was not settled meantime in the other industries, but apparently something has happened to prevent the spread of the trouble to the pulp and paper mills, as it is certain if these plants had become involved, news of it would have been cabled here immediately. It is readily recognized that if pulp production was halted in Norway the effect on the market would be substantial, especially should the cessation last for any length of time.

Generally importers quote prime bleached sulphite at 3.75 to 4 cents per pound ex dock New York or other American Atlantic ports, but it is reported some purchases have been made at slightly under this price range. Strong unbleached sulphite of Scandinavian origin is quoted at 2.85 to 3 cents on the dock at New York, with certain mill brands held for 3.10 and 3.15 cents, while easy bleaching sulphite is quoted at around 3.20 to 3.25 cents ex dock. Prime standard Swedish kraft is quoted at 2.90 to 3 cents on the dock and up to 3.15 cents is asked for extra qualities. Foreign ground wood is on a quotable basis of about $37 per ton ex dock American Atlantic ports for prime dry pulp.

Current market quotations ex dock New York and receipts at the port of New York during March follow:

Bleached sulphite, No. 1	3.65- 4.25
Unbleached sulphite, strong No. 1	2.85- 3.10
Unbleached sulphite, No. 2	2.75- 3.10
Easy bleaching sulphite	3.15- 3.30
Mitscherlich unbleached, genuine	3.25- 3.60
Mitscherlich unbleached, ordinary	3.00- 3.15
Kraft, standard Swedish	2.90- 3.15
Ground wood, per ton (dry)	36.00-38.00

E. M. Sergeant Co., 1,569 bls. from Gothenburg and 650 Oslo; M. Gottesman & Co., 2,330 bls. from Rotterdam and 4,000 Sebenico; Bulkley, Dunton & Co., 1,625 bls. from Rotterdam, 2,625 Bremen, 125 Hamburg and 317 Gothenburg; Johaneson, Wales & Sparre, 2,190 bls. from Gothenburg, 1,580 Hamburg and 4,700 Hernosand; Continental Paper Co., 140 bls. from Gothenburg; Price & Pierce, 2,825 bls. from Gothenburg; Tidewater Paper Mills Co., 12,000 bls. from Liverpool, N. S., 8,500 Weymouth, N. S., and 11,634 Port Clyde, N. S.; Atterbury Bros., 665 bls. from Bremen; Castle & Overton, 6,638 bls. from Bremen and 1,115 Rotterdam; Lagerloef Trading Co., 454 bls. from Kotka, 183 Helsingfors, 246 Bremen and 138 Hamburg; Central American National Bank, 3,294 bls. from Trieste; Daniel M. Hicks, Inc., 490 bls. from Trieste; National City Bank, 250 bls. from Hamburg; Central Union Trust Co., 1,500 bls. from Oslo; First National Bank of Boston, 1,000 bls. from Oslo; Empire Trust Co., 1,000

Starch

ECONOMY can never be mistaken for cheapness. In the matter of sizing material, starch is cheaper than an all-glue size, yet the results are identical—in fact, the paper made with starch sizing is stronger.

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Starch

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BLEACHED AND UNBLEACHED

Agents for Kellner Partington Paper Pulp Co., Ltd.
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The Pulp and Paper Trading Co.
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Dealers in
Domestic Chemical and Mechanical Pulps and Paper

AGENTS FOR
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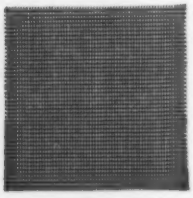
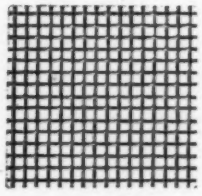
E. B. EDDY COMPANY, LTD., Hull, Canada
CANADIAN KRAFT LIMITED, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp

Howard Smith Paper Mills, Montreal, Quebec
EASTERN AGENTS of Sulphite Pulp
Made by Port Huron Sulphite & Paper Co., Port Huron, Mich.

FOURDRINIER WIRES



In Brass, Bronze and phosphor bronze, widths up to, and including 250 inches.



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WASHER WIRES
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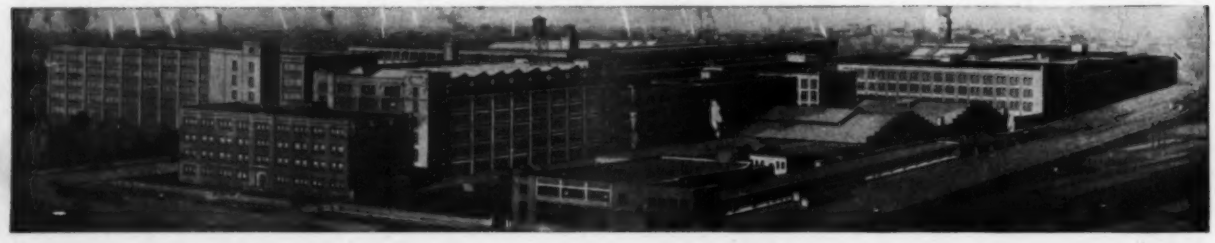
THE
W. S. TYLER COMPANY
Cleveland, Ohio, U. S. A.



bls. from Oslo and 2,500 Greaker; J. Andersen & Co., 840 bls. from Oslo, 3,375 Trieste, 250 Gothenburg, 840 Greaker and 1,342 Hamburg; Scandinavian Pulp Agency, 1,250 bls. from Gothenburg; Waterfalls Paper Mills, 505 bls. from Trieste; Seaboard National Bank, 793 bls. from Trieste; Guaranty Trust Co., 3,000 bls. from Gothenburg; Equitable Trust Co., 112 bls. from Antwerp; Perkins-Goodwin Co., 500 bls. from Oslo; Chemical National Bank, 600 bls. from Oslo; A. P. W. Paper Co., 14,410 bls. from Sheet Harbor, N. S.; Philadelphia Girard National Bank, 1,200 bls. from Oslo; Atterbury & McKelvey, 900 bls. from Oslo; Order, 650 bls. from Raumo, 11,078 Port Clyde, N. S., 150 Copenhagen, 15,344 Weymouth, N. S., 149 Hamburg, 5,605 Helsingfors, 510 Trieste, 32 Rotterdam, 1,330 Bremen and 5,676 Hango.

Paper Stock

Importations of papermaking materials other than wood pulp were fairly large during March, judging from receipts through the port of New York. There were some sizable shipments of rags imported, notwithstanding the comparatively quiet market condition obtaining in this country, and at least usual amounts of old rope, bagging and other grades were received.

Imports of all kinds of paper stock other than pulp at New York in the month of March, 1927, these data being taken from manifests of steamers reaching that port during the month, follow:

Old Rope

Brown Bros. & Co., 524 bls. and 550 coils; E. J. Keller Co., 234 bls.; Equitable Trust Co., 242 coils; International Purchasing Co., 53 bls.; Ellerman's Wilson Line, 206 coils; American Exchange Irving Trust Co., 40 bls.; Montell & McDonough, 5 bls.; G. M. Graves Co., 22 coils and 4 bls.; Salomon Bros. & Co. 78 bls.; S. Birkenstein & Sons, 58 bls.; American Express Co., 110 coils; George W. Millar & Co., 114 coils; N. E. Berzen, 116 coils; United Fiber Co., 53 coils; W. Schall & Co., 108 bls. and 95 rolls; William Steck & Co., 102 bls.; Garfield National Bank, 26 bls.; E. Butterworth & Co., 40 bls.; Order, 387 coils and 132 bls.

Old Bagging

Darmstadt, Scott & Courtney, 98 bls.; W. Schall & Co., 40 bls.; E. Butterworth & Co., 145 bls.; French-American Banking Corp., 78 bls.; National City Bank, 46 bls.; National Bank of Commerce, 92 bls.; J. M. Johnson, 49 bls.; E. J. Keller Co., 350 bls.; British Bank of South America, 155 bls.; Order, 317 bls.

Miscellaneous Paper Stock

Gaccione Bros. & Co., 9 bls.; Equitable Trust Co., 344 bls.; Furness, Withy & Co., 100 bls.; Milton Snedeker Corp., 193 bls.; Whaling Waste Products Co., 135 bls.; Bulkley, Dunton & Co., 65 bls.; J. Cohen & Son Co., 97 bls.; Brown Bros. & Co., 35 bls.; Chemical National Bank, 21 bls.; Goldman, Sachs & Co., 108 bls.; E. J. Keller Co., 854 bls.; Order, 986 bls.

Rags

Castle & Overton, 862 bls.; Paul Berlowitz, 392 bls.; Darmstadt, Scott & Courtney, 125 bls.; Bulkley, Dunton & Co., 256 bls.; Victor Galaup, Inc., 455 bls.; Robert Bishop Mfg. Co., 91 bls.; E. A. Stone Co., 164 bls.; Mystic Waste Co., 44 bls.; Royal Mfg. Co., 103 bls.; Salomon Bros. & Co., 139 bls.; S. Silberman Co., 136 bls.; E. Butterworth & Co., 266 bls.; J. Cohen & Co., 155 bls.; George W. Millar & Co., 319 bls.; Daniel M. Hicks, Inc., 47 bls.; Fritz Stern, 2 bls.; American Wool Stock Co., 122 bls.; S. Birkenstein & Sons, 285 bls.; E. Burrows, 4 bls.; J. A. Brookman & Co., 48 bls.; Union Waste Co., 133 bls.; Romeo Canovai & Figli, 467 bls.; J. Wild & Co., 45 bls.; J. M. Jaffe, 89 bls.; The Barrett Co., 983 bls.; E. J. Keller Co., 1,093 bls.; American Cigar Co., 250 bls.; Equitable Trust Co., 1,193 bls.; French-American Banking Corp., 190 bls.; National City Bank, 633 bls.; Chase National Bank, 1,775 bls.; Chemical National Bank, 195 bls. State Bank, 1,256 bls.; Philadelphia Girard National Bank, 69 bls.; Fidelity International Trust Co., 324 bls.; American Exchange-Pacific National Bank, 90 bls.; American Overocean Corp., 25 bls.; A. C. Fetterolf, 21 bls.; Gallagher & Ascher, 57 bls.; American Express Co., 97 bls.; C. B. Richard

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Soda Ash

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Bicarbonate of Soda

MICHIGAN ALKALI CO.

General Sales Department

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THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

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DRAPER BROTHERS COMPANY

CANTON, MASS.

Woolen Manufacturers Since 1856

REPRESENTATIVES

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ANIMAL SIZING GLUE STOCK

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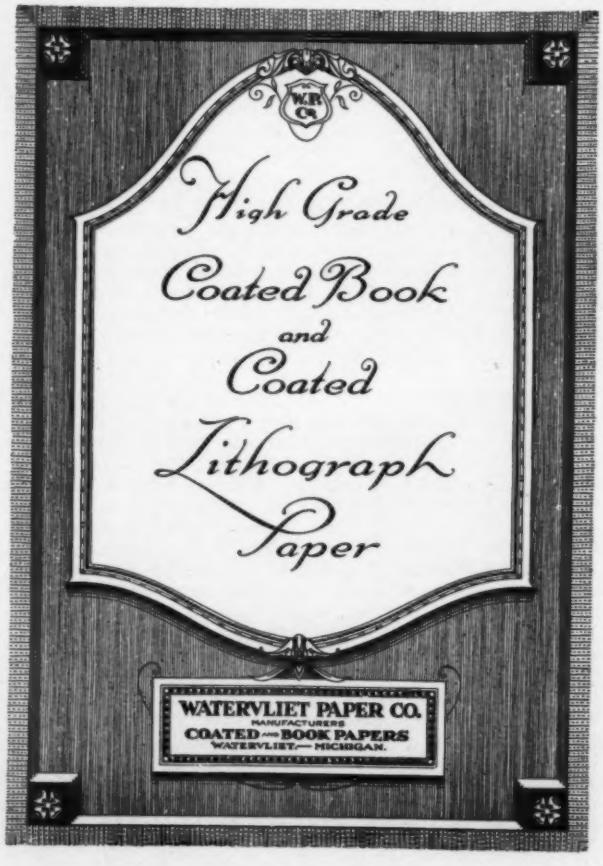
Pickles' Patent Automatic Steam Regulator FOR Paper Making Machines

Which absolutely control the drying of the sheet. Installed on sixty days' trial

W. F. PICKLES Buckland, Conn.



& Co., 125 bls.; Kidder Peabody Acceptance Corp., 63 bls.; Pennrich & Co., 55 bls.; G. W. Sheldon & Co., 145 bls.; Brown Bros. & Co., 459 bls., R. F. Downing & Co., 88 bls.; Goschens & Cunliffe, 267 bls.; C. R. Spence & Co., 806 bls.; Goldman, Sachs & Co., 501 bls.; A. W. Fenton, Inc., 381 bls.; T. D. Downing & Co., 54 bls.; International Mercantile Marine Co., 45 bls.; Order, 1,529 bls.

Paper

Judging from arrivals through the port of New York, imports of paper into the United States were on a rather large scale in March. There were some sizable supplies of newsprint received from Germany and the Scandinavian countries, and also fairly big shipments of wrapping paper, principally from Sweden. Usual amounts of cigarette, filter, hanging, photo, writing and other classes of paper were noted in the receipts.

Imports of paper of all kinds through the port of New York last month, these data being taken from manifests of steamers reaching that port, follow:

Printing

M. Gottesman & Co., 1,185 rolls from Gothenburg; Star Co., 2,906 bls. from Hallstavik; Perry, Ryer & Co., 59 cs. from Glasgow; E. Walker, 3 cs. from Trieste; Perkins-Goodwin Co., 300 cs. from Hamburg; Keuffel & Esser Co., 189 cs. from Hamburg; Freedman & Slater, 4 cs. from Hamburg; F. Henjes, Jr., 124 rolls from Hamburg; Ossian Bey Co., 69 reels from Copenhagen; Oxford University Press, 30 cs. from Liverpool; B. F. Drakenfeld & Co., 58 cs. from Liverpool; Hudson Trading Co., 160 reels from Gothenburg, 12 reels Hamburg and 87 rolls Stockholm; E. Dietzgen & Co., 12 cs. from Rotterdam and 88 cs. Hamburg; P. C. Zuhlke, 307 cs. from Antwerp; Parsons & Whittemore, 342 reels from Bremen, 91 rolls Hamburg and 483 reels from Hango; J. P. Heffernan Paper Co., 11 bls. from Rotterdam; New Haven Times Co., 79 reels from Gothenburg; Journal of Commerce, 245 reels from Helsingfors; H. Reeve Angel & Co., 13 rolls from Gothenburg; The Times Co., 80 reels from Gothenburg; Chatfield Co., 10 bls. from Gothenburg; American Exchange Irving Trust Co., 148 reels from Gothenburg; Schenkers, Inc., 7 bls. from Trieste; A. Zabriskie, 98 reels from Bremen; Steiner Paper Corp., 82 cs. from Rotterdam; Martin & Bechtold, 11 cs. from Bremen; Order, 382 reels and 475 cs. from Hango and 113 cs. Bremen.

Wrapping

C. K. MacAlpine & Co., 234 bls. and 212 rolls from Gothenburg and 29 cs. and 9 bls. Hamburg; Borregaard Co., 3,518 rolls and 239 bls. from Gothenburg; George W. Millar & Co., 66 rolls from Gothenburg; H. Reeve Angel & Co., 14 rolls from Gothenburg; National Consumers Paper Co., 5 rolls from Aguadilla; Bendix Paper Co., 5 cs. from Hamburg; Steiner Paper Corp., 54 bls. from Oslo; Commonwealth Bank, 13 cs. from Hamburg; F. C. Strype, 57 pkgs. from Antwerp; M. M. Cohen, 40 bls. from Gothenburg; Wilkinson Bros. & Co., 27 cs. from Gothenburg; D. S. Walton & Co., 15 reels from Gothenburg; Universal Paper Co., 140 reels and 78 bls. from Gothenburg; Crepe Craft Co., 3 bls. and 59 reels from Gothenburg; C. G. Winans Co., 786 rolls and 6 bls. from Gothenburg; J. B. Harris Co., 3 cs. from San Juan; Hudson Trading Co., 113 reels from Rotterdam; International Acceptance Bank, 54 bls. from Oslo; Insight Paper Co., 858 reels from Oslo; Blauvelt-Wiley Paper Mfg. Co., 49 bls. from Glasgow; Arkell Safety Bag Co., 90 bls. and 188 reels from Gothenburg; C. J. O'Shea, 51 bls. from Gothenburg; Borough Paper Co., 6 bls. from Gothenburg; Order, 11 cs. from Rotterdam, 1,222 bls. Antwerp, 57 bls. Gothenburg and 25 bls. Naples.

Cigarette

P. J. Schweitzer, Inc., 193 cs. from Marseilles; Standard Products Corp., 733 cs. from Havre and 2 cs. Rotterdam; R. J. Reynolds Tobacco Co., 1,320 cs. from St. Nazaire and 400 cs. Havre; DeManduit Paper Corp., 624 cs. from St. Nazaire; American Tobacco Co., 500 cs. from Bordeaux; British-American Tobacco Co., 5 cs. from Liverpool; M. Spiegel & Co., 13 cs. from Bordeaux; American Exchange Irving Trust Co., 10 cs. from Southampton; Surbrug Co., 15 cs. from Havre; Southern Pacific Co., 3 cs. from Havre.

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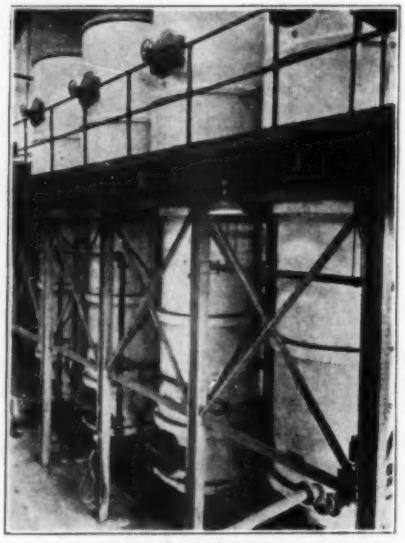
Cloquet, Minn.



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MAXIMUM
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NO ENTRAINMENT

SODA and
SULPHATE
PROCESSES

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See page 314 in the 1926 Paper and Pulp Mill Catalogue

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In 38 years of design and manufacture of water filters and softeners, Hungerford & Terry have installed an aggregate daily capacity of more than one billion gallons.

This experience has enabled them to aid paper and other manufacturers to improve their products and reduce their costs of production by the proper treatment of that important material—water.

Is your water supply properly protected to insure highly efficient mill operation and the highest quality in your product? Hungerford & Terry Engineers will investigate your conditions and report to you fully without obligation.

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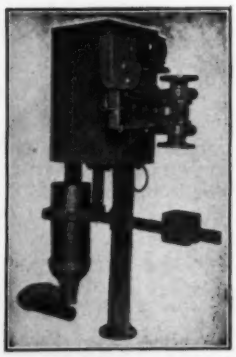

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Keuffel & Esser Co., 14 cs. from Southampton and 147 cs. Hamburg; H. Reeve Angel & Co., 14 cs. from London.

Filter

G. Lueders & Co., 20 bls. from Bordeaux; E. Fougera & Co., 46 cs. from Bordeaux and 100 cs. Antwerp; H. Reeve Angel & Co., 30cs. from London and 15cs. Antwerp; Chatham & Phenix National Bank, 3 cs. from Nagoya; A. Giese & Son, 55 bls. from Bordeaux; C. Sleicher & Scholl Co., 13 cs. from Hamburg.

Writing

Stern Bros., 9 cs. from Havre; G. W. Sheldon & Co., 7 cs. from Hamburg; Gallagher & Ascher, 6 cs. from London; Blue Print Paper Co., 65 cs. from Marseilles; H. Scheuer & Sons, 4 cs. from Hamburg; Guibont Freres & Co., 7 cs. from Havre and 4 cs. Southampton; F. L. Kraemer & Co., 2 cs. from London; Frederick Loeser Co., 9 cs. from Havre.

Tissue

F. C. Strype, 49 cs. from Liverpool; Milton Snedeker Corp., 17 cs. from Hamburg; Schenkers, Inc., 33 cs. from Hamburg; J. B. Mast & Co., 10 cs. from Genoa.

Hanging

J. E. Bernard & Co., 62 pkgs. from Antwerp and 2 cs. Gothenburg; C. A. Haynes & Co., 282 pkgs. from London and 10 pkgs. Liverpool; Panama-Pacific Line, 28 pkgs. from London; F. J. Emmerich & Co., 61 pkgs. from London, 33 pkgs. Hamburg, 36 pkgs. Liverpool and 3 bls. Havre; A. C. Dodman, Jr., 32 pkgs. from Southampton and 79 cs. Liverpool; Meadows, Wye & Co., 302 bls. from Hamburg; W. H. S. Lloyd & Co., 28 pkgs. from Liverpool and 18 bls. Havre; Rohner, Gehrig & Co., 223 bls. from Antwerp; G. I. Hunken & Co., 14 bls. from Hamburg; R. F. Downing & Co., 8 pkgs. from London; Gallagher & Ascher, 19 bls. from Hamburg; F. A. Binder, 6 bls. from Bremen.

Photo

Globe Shipping Co., 68 cs. from Bremen and 3 cs. Southampton; P. C. Zuhlke, 259 cs. from Antwerp and 16 cs. Rotterdam; P. Puttmann, 10 cs. from Antwerp; Gevaert Co. of America, 387 cs. from Antwerp; J. J. Gavin & Co., 15 pkgs. from Liverpool; Herbert & Heusgen, 6 cs. from London; J. H. Schroeder Banking Corp., 7 cs. from Bremen; Order, 12 cs. from Antwerp.

Board

J. P. Heffernan Paper Co., 690 reels from Rotterdam; First National Bank of Brooklyn, 142 reels from Rotterdam; Adrian Vuyck, 1,649 reels from Rotterdam; Haas Bros. 12 rolls from Gothenburg and 426 reels Rotterdam; Steffens, Jones & Co., 44 bls. from Gothenburg; W. Hartmann & Co., 92 bls. from Trieste; G. M. Thurnauer Co., 34 cs. from Antwerp; Premier Flour Co., 10 cs. from Hamburg; Fibre Case & Novelty Co., 99 bls. from Gothenburg; Coty, Inc., 130 cs. from Havre; Perkins-Goodwin Co., 825 reels from Rotterdam; A. B. Massa Paper Corp., 207 pkgs. from Rotterdam; O. M. Baxter, Inc., 45 cs. from Gothenburg; Lowy & Lowy, 14 bls. from Gothenburg; Brooks Paper Co., 5 cs. from Liverpool; International Forwarding Co., 7 bls. from London; Robert Wilson Paper Co., 142 reels from Rotterdam; Wicander & Co., 1,991 cs. from San Feliu de Guixols; Standard Trunk Mfg. Co., 9 bls. from Gothenburg; Order, 239 rolls from Antwerp and 4 bls. Gothenburg.

Miscellaneous

P. H. Petry & Co., 27 cs. from Rotterdam and 12 cs. Hamburg; S. Gilbert, 30 cs. from Rotterdam; F. C. Strype, 60 cs. from Rotterdam, 9 cs. Antwerp, 8 cs. Southampton and 40 cs. Hamburg; Tamm & Co., 13 cs. from Rotterdam; H. Reeve Angel & Co., 6 cs. from Gothenburg and 16 cs. London; Whiting-Patterson Co., 66 cs. from Southampton, 21 cs. Hamburg and 14 cs. London; Keller-Dorian Paper Co., 38 cs. from Southampton; International Forwarding Co., 32 cs. from Hamburg and 3 cs. Marseilles; Schenkers, Inc., 17 cs. from Hamburg and 6 cs. Bremen; E. V. Hadley, 12 cs. from Hamburg; E. Hennington & Co., 3 cs. from Hamburg; F. L. Kraemer & Co., 4 cs. from London; Louis De Jonge Co., 12 cs.

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The Mitts & Merrill Shredder performs on magazines, books, old paper and boxboard, frozen or dried pulp laps, roll and sheet stock, in such a way as to greatly reduce their resistance to hydration when they reach the beater. It gives the beater an economical lift.

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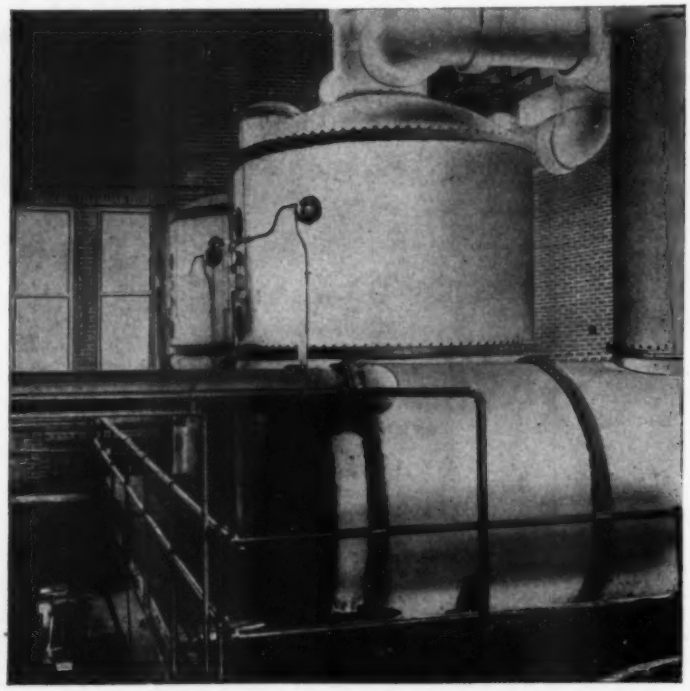

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from Hamburg; Atlantic Forwarding Co., 30 cs. from Hamburg; Japan Paper Co., 18 cs. from Havre and 5 cs. Rotterdam; C. B. Richard & Co., 86 bls. from Hamburg; W. J. Byrnes & Co., 2 cs. from Hamburg; Pennsylvania Railroad Co., 32 cs. from Hamburg; F. Henjes, Jr., 3 cs. from Havre; Quality Art Novelty Co., 8 cs. from Hamburg; W. Hartmann & Co., 13 cs. from Hamburg; H. D. Catty & Co., 11 cs. from Hamburg; American Exchange Irving Trust Co., 20 cs. from Hamburg; G. W. Sheldon & Co., 6 cs. from Havre; Whitfield Paper Works, 26 cs. from Shanghai; Globe Shipping Co., 37 cs. from Bremen; C. H. Boulin, 37 cs. from Havre; International Acceptance Bank, 10 cs. from Rotterdam; D. C. Andrews & Co., 141 cs. from Hamburg and 6 cs. London; Brown Bros. & Co., 6 cs. from Hamburg; G. A. Vedovi & Co., 4 cs. from Genoa; Coenca-Morrison Co., 4 cs. from Hamburg and 12 cs. Havre; Borden & Riley Paper Co., 21 cs. from Antwerp; H. Scott Chalfant, Inc., 4 cs. from Rotterdam; Steffen, Jones & Co., 15 bls. from Gothenburg and 4 cs. Hamburg; E. M. Sergeant Co., 8 cs. from Gothenburg; Ward line, 102 bls. from Bremen; J. J. Shore & Co., 10 cs. from Bremen; Kolesch & Co., 4 cs. from Rotterdam.

Birthday Celebration in Honor of Jack Andersen

Jack Andersen, as Johannes Andersen, of J. Andersen & Co., and the Pulp and Trading Co., of New York, is best known, was entertained on his sixtieth birthday on March 29 at a subscription dinner in the Hotel Plaza, New York, which was attended by thirty or more of his friends and business associates. The hosts included I. W. Bianchi, William Bianchi, Ole Bull, S. J. Christensen, E. Christophersen, H. D. Doxrud, Dr. Viggo Drewsen, F. E. Forsbrey, Morris Gintzler, Arthur Gran, Dr. Bjarne Johnsen, Arthur J. Jones, Oluf Kiaer, Homer M. Lake, G. Hilmer Lundbeck, James T. Mix, Russell McCandless, H. P. G. Nordstrand, Anton Olafsen, L. D. Post, James T. Robinson, H. Unander Scharin, O. F. Swanson, C. B. Thorne, Rolf G. Westad. As extra guests were listed the two sons of Mr. Andersen, Erik and Rolf.

A poem in honor of Mr. Andersen, composed by Mrs. Viggo Drewsen, occupied two pages of the menu. It bore the simple title "Jack," and was full of personal and local allusions in the Norwegian language which made it almost impossible to translate into English. After proposing a toast to the health of Mr. Andersen, in the course of which he remarked that there were two brainy Norwegians in New York and the other was Jack Andersen, Dr. Viggo Drewsen recited Mrs. Drewsen's poem in Norwegian, accompanied to music.

Dr. Bjarne Johnsen presided at the dinner as toastmaster, and his brother-in-law, C. B. Thorne, made a lengthy address extolling the remarkable talents of the guest of honor, but everyone present had something to say in his praise and united in wishing Mr. Andersen many happy returns of the day.

Mr. Andersen is not without honor in his native country, having been made a Knight of St. Olaf by the King of Norway in 1923.

Corrections

In our March issue on page 2123, in the history of the Black-Clawson Co., a regrettable error was made in printing which so jumbled up the first paragraph as to make it incomprehensible. It should have read as follows:

"The Black-Clawson Co., of Hamilton, Ohio, is internationally recognized as a leader in the manufacture of paper and pulp mill machinery. It was originally started by Frank X. Black in 1874 in a small way as a general machine shop. In 1878, L. P. Clawson was admitted as a partner when they began to specialize in the manufacture of paper machinery in a small shop at Market street and Monument avenue."

In the story of the second mid-western power show held in Chicago Feb. 21-24, 1927, published on page 2080a in the March issue, under the heading "Power Conference Notes," it was erroneously implied that the exhibitors whose exhibits were described in this story did not exhibit in the Fifth National Exhibition of Power and Mechanical Engineering held at Grand Central Palace on Dec. 6-11, 1926. Out of the fifty-four concerns listed in our Power Conference notes, forty-five were exhibitors in the New York Power Show.

AGAIN

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Continental Paper Co., Bogota, N. J., orders and re-orders—

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success on almost all kinds and grades of stock—in mills of all sorts and descriptions.

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COTTON *and* **PAPER ROLLS**

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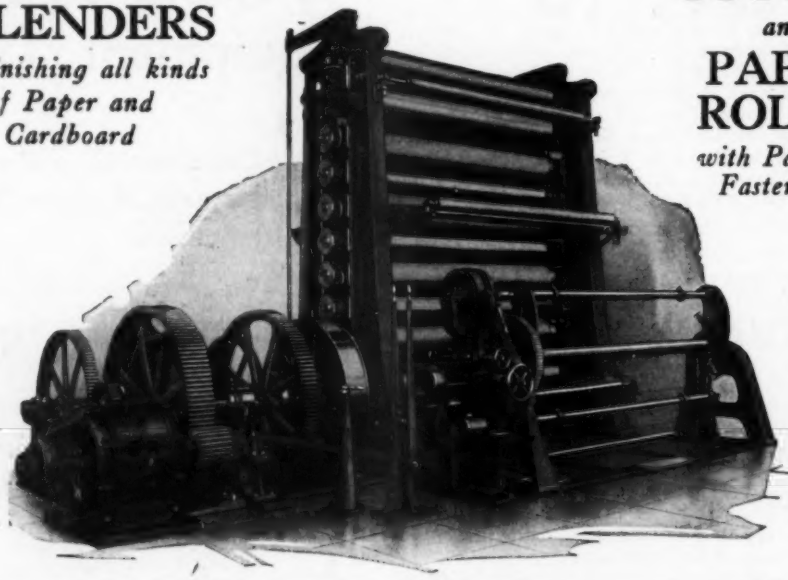

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